

**SONY®**

DIGITAL VIDEO HYBRID RECORDER

**DNW-A100/A100P**

**DNW-A50/A50P**

**DNW-A45/A45P**

ANALOG COMPOSITE DECODER BOARD

**BKDW-505/506**

SDDI INPUT KIT

**BKNW-103**

ANALOG COMPONENT INPUT BOARD

**BKNW-104**

AES/EBU I/F KIT

**BKNW-105**



MAINTENANCE MANUAL Part 1

1st Edition

## 警告

このマニュアルは、サービス専用です。

お客様が、このマニュアルに記載された設置や保守、点検、修理など行くと感電や火災、人身事故につながる可能性があります。

危険をさけるため、サービストレーニングを受けた技術者のみご使用ください。

## **WARNING**

This manual is intended for qualified service personnel only.

To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

## **WARNUNG**

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.

Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegebenen Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

## **AVERTISSEMENT**

Ce manuel est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

DNW-A100	Serial No. 10111 and Higher
DNW-A100P (UC)	Serial No. 10001 and Higher
DNW-A100P (CE)	Serial No. 10001 and Higher
DNW-A50	Serial No. 10001 and Higher
DNW-A50P (UC)	Serial No. 10001 and Higher
DNW-A50P (CE)	Serial No. 10001 and Higher
DNW-A45	Serial No. 10001 and Higher
DNW-A45P (UC)	Serial No. 10001 and Higher
DNW-A45P (CE)	Serial No. 10001 and Higher
BKDW-505	Serial No. 10001 and Higher
BKDW-506 (UC)	Serial No. 10001 and Higher
BKDW-506 (CE)	Serial No. 10001 and Higher
BKNW-103	Serial No. 10001 and Higher
BKNW-104	Serial No. 10001 and Higher
BKNW-105	Serial No. 10001 and Higher

**Attention-when the product is installed in Rack:**

**1. Prevention against overloading of branch circuit**

When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.

**2. Providing protective earth**

When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

**3. Internal air ambient temperature of the rack**

When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

**4. Prevention against achieving hazardous condition due to uneven mechanical loading**

When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.



# Table of Contents

## Manual Structure

Purpose of this manual .....	5
Contents .....	5
Related manuals .....	6
<b>Caution for Handling the Unit with Built-in HDD (for part 1)</b> .....	7

## 1. Installation

1-1. Installation Procedure .....	1-1
1-2. Supplied Accessories .....	1-1
1-3. Operating Conditions .....	1-2
1-4. Power Supply .....	1-2
1-4-1. Voltage and Power Requirements .....	1-2
1-4-2. Power Cord .....	1-2
1-5. Installation Space .....	1-3
1-6. Rack Mounting .....	1-4
1-7. Connecting Connector/Cable .....	1-9
1-8. Signal Inputs and Outputs .....	1-10
1-9. Switch Settings on Connector Panel .....	1-13
1-10. Switch and Shorting Plug Setting on PC Boards .....	1-14
1-10-1. APR-12 Board .....	1-14
1-10-2. APR-13 Board .....	1-16
1-10-3. DM-89 Board .....	1-18
1-10-4. TBC-23 Board .....	1-19
1-10-5. SS-63 Board .....	1-20
1-10-6. SSX-1 Board .....	1-22
1-11. Mode Switching of Search Dial .....	1-23
1-12. Setup Menu Items .....	1-24
1-13. Reference System .....	1-26
1-14. 525/625 Switchable Function .....	1-27
1-15. Settings and Adjustment when Peripheral Equipment is Connected .....	1-28
1-15-1. Time Code Setting .....	1-28
1-15-2. System Phase Alignment .....	1-29
1-15-3. Setup Menu Setting .....	1-29
1-15-4. Settings when Extended Hard Disk is Connected (Will be available as a supplement.)	
1-16. Installation of BKDW-505/506 .....	1-31
1-16-1. Procedure .....	1-31
1-16-2. Check after Installing .....	1-32
1-17. Installation of BKNW-103 (Will be available as a supplement.)	

1-18.	Installation of BKNW-104 .....	1-38
1-18-1.	Procedure .....	1-38
1-18-2.	Adjustment after Installing .....	1-39
1-19.	Installation of BKNW-105	
	(Will be available as a supplement.)	

## 2. Service Overview

2-1.	Notes on Power Supply Block .....	2-1
2-1-1.	Warning on Primary Circuit Block and Electric Shock .....	2-1
2-1-2.	Note on Resetting the Circuit Breaker .....	2-1
2-2.	Cleaning when the Heads are Clogged .....	2-1
2-3.	Removal/Installation of Cabinet .....	2-2
2-3-1.	Upper Lid, Side Panels, and Bottom Plate	
	Removal/Installation .....	2-2
2-3-2.	Control Panels Removal/Installation .....	2-3
2-3-3.	Connector Panel Assembly Removal/Installation .....	2-4
2-3-4.	Power Supply Panel Assembly Removal/Installation .....	2-5
2-4.	Plate MD Assembly Removal/Installation .....	2-5
2-5.	Cassette Compartment Removal/Installation .....	2-6
2-6.	Lower Control Panel Assembly Removal/Installation .....	2-7
2-7.	Circuit Function .....	2-8
2-8.	Location of Main Part .....	2-10
2-8-1.	Printed Circuit Boards, Power Supply Unit,	
	and HDD Units Location .....	2-10
2-8-2.	Main Mechanical Parts Location .....	2-13
2-9.	Function and Location of Sensors .....	2-14
2-10.	System of Cassette .....	2-16
2-11.	Information of LEDs on Circuit Boards .....	2-18
2-12.	How to Take Out the Cassette when the Tape is Slacking .....	2-22
2-13.	Pulling Out/Insertion of Plug-in Board .....	2-23
2-14.	Fixtures and Adjustment Equipment List .....	2-24
2-14-1.	Fixtures .....	2-24
2-14-2.	Equipment for Adjustment .....	2-26

## 3. Error Message

3-1.	Error Message .....	3-1
------	---------------------	-----

## 4. Maintenance Mode

(Will be available as a supplement.)

## 5. Periodic Maintenance and Inspection

5-1.	Periodic Maintenance .....	5-1
5-1-1.	Index .....	5-1
5-1-2.	Periodic Replacement and Check Item List .....	5-2
5-1-3.	Hours Meter .....	5-3
5-2.	Cleaning .....	5-4
5-2-1.	Cleaning by Cleaning Tape .....	5-4
5-2-2.	General Information for Cleaning by Cleaning Cloth.....	5-4
5-2-3.	Tape Running Surface of Upper Drum and Video Heads Cleaning.....	5-6
5-2-4.	Tape Running Surface of Lower Drum .....	5-7
5-2-5.	Stationary Heads Cleaning .....	5-8
5-2-6.	Tape Running System and Tape Cleaner Cleaning .....	5-9
5-2-7.	Fan Motors Cleaning .....	5-10
5-2-8.	Cassette Compartment/Cassette Supports Cleaning .....	5-11

## 6. Replacement of Plug-in Boards

(Will be available as a supplement.)

## 7. Spare Parts

7-1.	Notes on Repair Parts .....	7-1
7-2.	Exploded Views .....	7-2
7-3.	Plug-in Boards .....	7-4
7-4.	Packing Materials and Supplied Accessories .....	7-5
7-5.	Fixtures List .....	7-6

## Appendix A Outline of Format

A-1.	Outline .....	A-1
A-2.	Recording Format.....	A-1
A-3.	Head Configuration .....	A-5
A-4.	Signal Processing .....	A-6
A-4-1.	Features of Signal Processing .....	A-6
A-4-2.	Outline of Signal Processing .....	A-6

## Appendix B Setting Check Sheet

## Appendix C Block Diagrams

INDEX .....	C-1
OVERALL (1/2) .....	C-3
OVERALL (2/2) .....	C-4



# Manual Structure

---

## Purpose of this manual

This manual is the Maintenance manual part1 of digital video hybrid recorder DNW series. DNW series includes the following models .

DNW-A100/A100P

DNW-A50/A50P

DNW-A45/A45P

This manual is intended for use by trained system and service engineers, and provides the information that is required to install, maintenance information, and the information for service such as replacement of plug-in boards.

Moreover, provides the related information (how to install, etc.) for the following optional board.

BKDW-505/506     Analog Composite Decoder Board

BKNW-103         SDDI Input Kit

BKNW-104         Analog Component Input Board

BKNW-105         AES/EBU I/F Kit

---

## Contents

This manual is organized by following sections.

### Section 1    Installation

Explains the information that is required to install (environment, connection information, initial setting, etc.), and when building optional board into this unit (installation, initial setting/adjustment, etc.) .

### Section 2    Service Overview

Explains fundamental area of the information that is required to service , (removal of cabinet and cassette compartment, the functions of printed circuit board, the locations of main part, fixture and measuring equipment information, notes, etc.) , the measures against trouble and ISR (Interactive Status Reporting system).

### Section 3    Error Message

Explains the error messages.

### Section 4    Maintenance Mode

Explains each menu of the maintenance mode.

### Section 5    Periodic Maintenance and Inspection

Explains the recommended periodic maintenance, and the cleaning procedure.

### Section 6    Replacement of Plug-in Boards

Explains how to replace the plug-in board and how to adjust and check after replacement.

### Section 7    Spare Parts

Describes the spare parts list and the exploded view for the service parts of this unit, and the packing materials and supplied accessories list.

### **Appendix A Outline of Format**

Explains the Betacam SX format and the head configuration.

### **Appendix B Setting Check Sheet**

The sheet is used for checking the setup conditions such as switch, setup menu under the application.

### **Appendix C Block Diagrams**

Describes the overall block diagram

---

## **Related manuals**

Besides this “Maintenance manual part 1”, the following manuals are available for digital video hybrid recorder DNW series.

- **Operation Manual Part 1 (Supplied with the DNW.)**

This manual is necessary for application and operation (and installation) of the DNW.

- **Maintenance Manual Part 2 (available on request )**

This manual describes the information that premises the parts level service (adjustments, board layouts, schematic diagrams, detailed parts list, etc.) for this unit and optional board.

If this manual is required, please contact to Sony's service organization.

- **Protocol Manual of Remote (9-pin) Connector (available on request)**

This manual explains the protocol for controlling the VTR via the RS-422A (9-pin serial remote) .

If this manual is required, please contact to Sony's service organization.



## Caution for Handling the Unit with Built-in HDD (for Part 1)

This unit has two built-in hard disk drives (HDDs). Pay careful attention to the following and perform operations with care when installing, servicing, and maintaining this unit.

---

### **Never give any mechanical shock and vibration.**

This may cause an HDD trouble or destroy the data in HDD.

- Pack this unit using specified packing materials when carrying the unit. Use a cart with less-vibration when carrying this unit by a cart. If an excessive mechanical shock and vibration are applied, the HDD may be damaged.
- Never move this unit under power on state. Take out or insert this unit from or into the rack under the power off. Also never install or remove the cabinet under power on state.
- When putting the unit on the floor, put this unit on the floor gently with the specified feet attached to the bottom of the unit. If there are no feet on the bottom, attach them before putting this unit, or put this unit gently so that no sound is generated.

---

### **Never touch the unit for 30 seconds after the power is turned off.**

The disks in HDD rotate by inertia for a while after the power is turned off. In this case, the heads are in the most unstable state. This period is more sensitive to a mechanical shock and vibration than during power on state. Never give even a slight shock for at least 30 seconds after the power is turned off. Operations can be initiated (because the disks stop) after 30 seconds or more.

---

### **For failure occurring in HDD**

If it seems that the HDD of this unit causes a trouble (a failure occurs in the HDD), treat this unit in the same manner as described above. In so doing, protect the HDD from increase of the damage till confirming the contents of the failure or analyzing the failure.



# Section 1

## Installation

### 1-1. Installation Procedure

#### CAUTION

Hard disk drives are embedded in this unit. Pay careful attention when installing the unit.  
Be careful not to give a shock and mechanical vibration to it. This may cause a trouble.

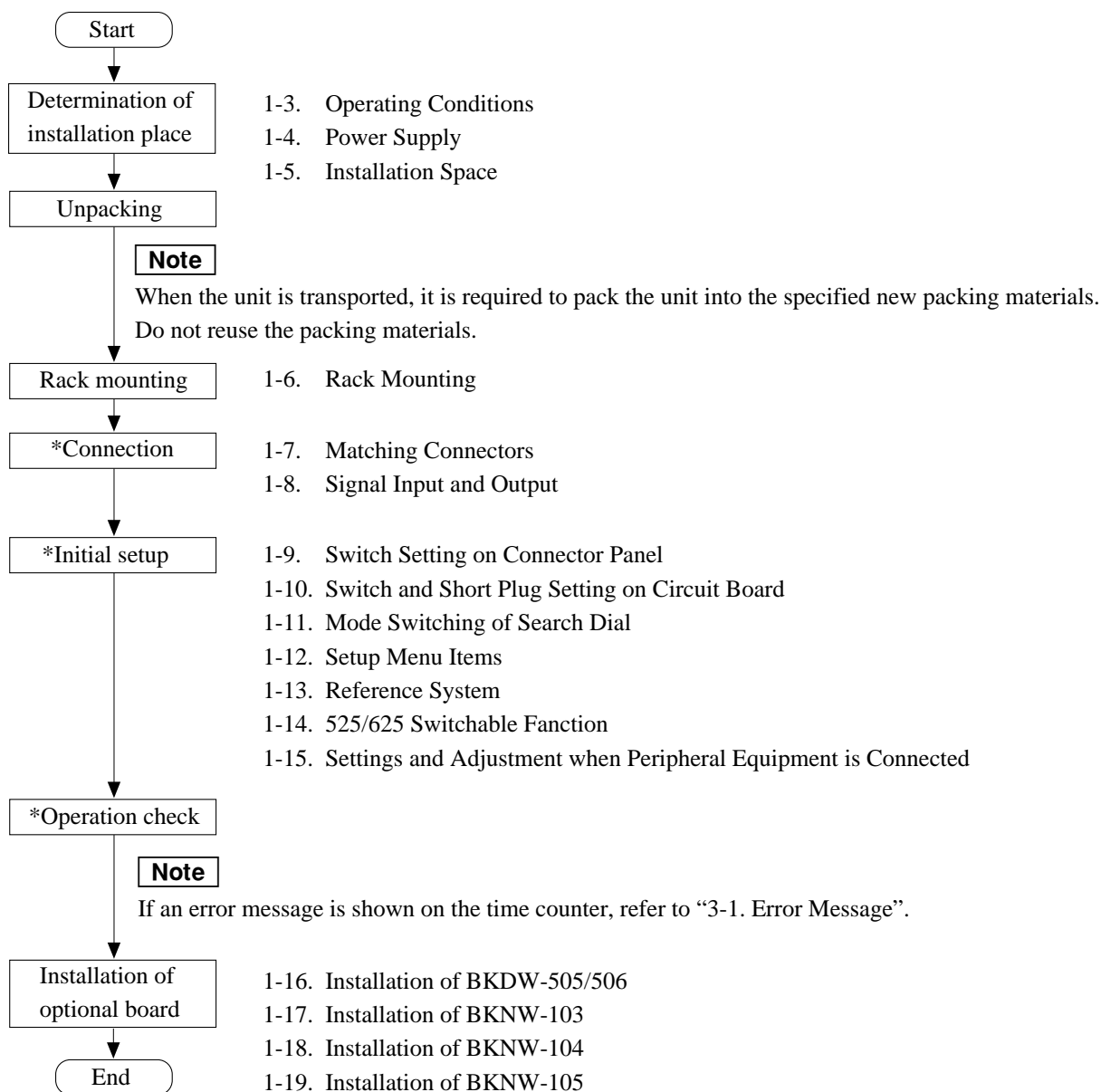
Installation procedure of this unit is shown on the following flowchart.

Refer to each section about detail of each flow.

The operation manual is also required to do \* - marked flow.

### 1-2. Supplied Accessories

AC power cord set .....	1
Plug holder .....	1
9 pins remote control cable (RCC-5G) .....	1
SCSI terminal connector .....	1
Screws for rack mounting (PSW 4 × 16) .....	4
Operation manual .....	1
Maintenance manual (Part 1) .....	1



## 1-3. Operating Conditions

### CAUTION

Good air circulation is essential to prevent internal heat build-up. Place the unit in location with sufficient air circulation.

Do not block the ventilation holes of the cabinet and the front and rear panels.

Operating temperature : +5°C to +40°C

(When the inner of the unit becomes less than +5°C, the hard disk portion does not start up because of entering into heart up mode.

The inner of the unit becomes +5°C or more, the hard disk portion start up automatically.)

Operating humidity : 25% to 80%  
(Condensation not allowed)

Storage temperature : -20°C to +60°C

Locations to avoid :

- Areas where the unit will be exposed to direct sunlight of any other strong lights.
- Areas near heat sources.
- Dusty areas or areas subject to vibration.
- Areas with strong magnetic field.
- Areas with much electrical noise.
- Areas with much static electricity.
- Areas that is impossible to find a specified room for installation.

(Refer to “1-5. Installation Space” page 1-3)

Horizontal condition : Do not slant the front and rear of the unit more than 30°.

### CAUTION

Fix the unit securely to avoid slipping if the unit is not operated at horizontal place.

## 1-4. Power Supply

### 1-4-1. Voltage and Power Requirements

#### WARNING

Be sure to operate the unit within the range of recommended power voltage.

Recommended power voltage: AC 100 to 240 V  $\pm$ 10%

Recommended power frequency: 50 Hz or 60 Hz

Power consumption: DNW-A100/A100P; 320 W (320 VA)  
DNW-A50/A50P; 300 W (300 VA)  
DNW-A45/A45P; 300 W (300 VA)

Rush current: Power voltage 100 V IN; 10 A  
Power voltage 240 V IN; 20 A

This unit's power line has a switching regulator with the power factor 98%.

The power consumption just described is includes the power consumption of a optional board BKDW-505 or BKDW-506.

#### Note

AC power supply is required a capacity which is commensurate with rush current.

If the capacity of the AC power supply is not enough, the breaker of AC power of a supply side may operate or this unit may not operate normally.

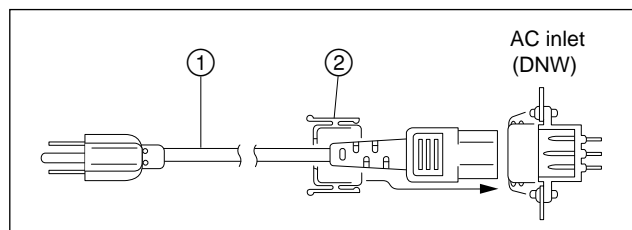
### 1-4-2. Power Cord

#### WARNING

Use the specified power cord only when connecting.  
Never use a injured power cord.

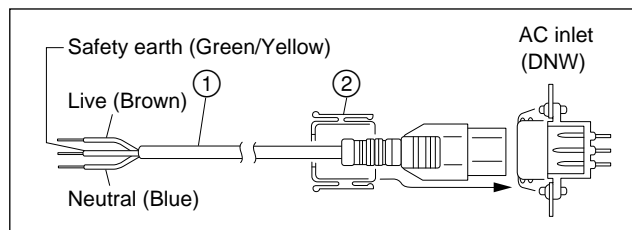
Power cord for the customer in the U.S.A. and Canada.

- ① Power cord set (approx. 2.4 m) 1-551-812-11
- ② Plug holder (Black) 2-990-242-01



Power cord for the customer in the U.K..

- ① Power cord set (approx. 2.5 m) 1-590-910-11
- ② Plug holder (Gray) 3-170-078-01



If the unit destined for Europe is used in the area except the U.K., please consult with local Sony's sale/service office.

## 1-5. Installation Space

Do not block ventilation (upper lid, right side panel, lower portion of front panel, bottom plate) and exhaust part when installing because this unit is air-cooled by four fans.

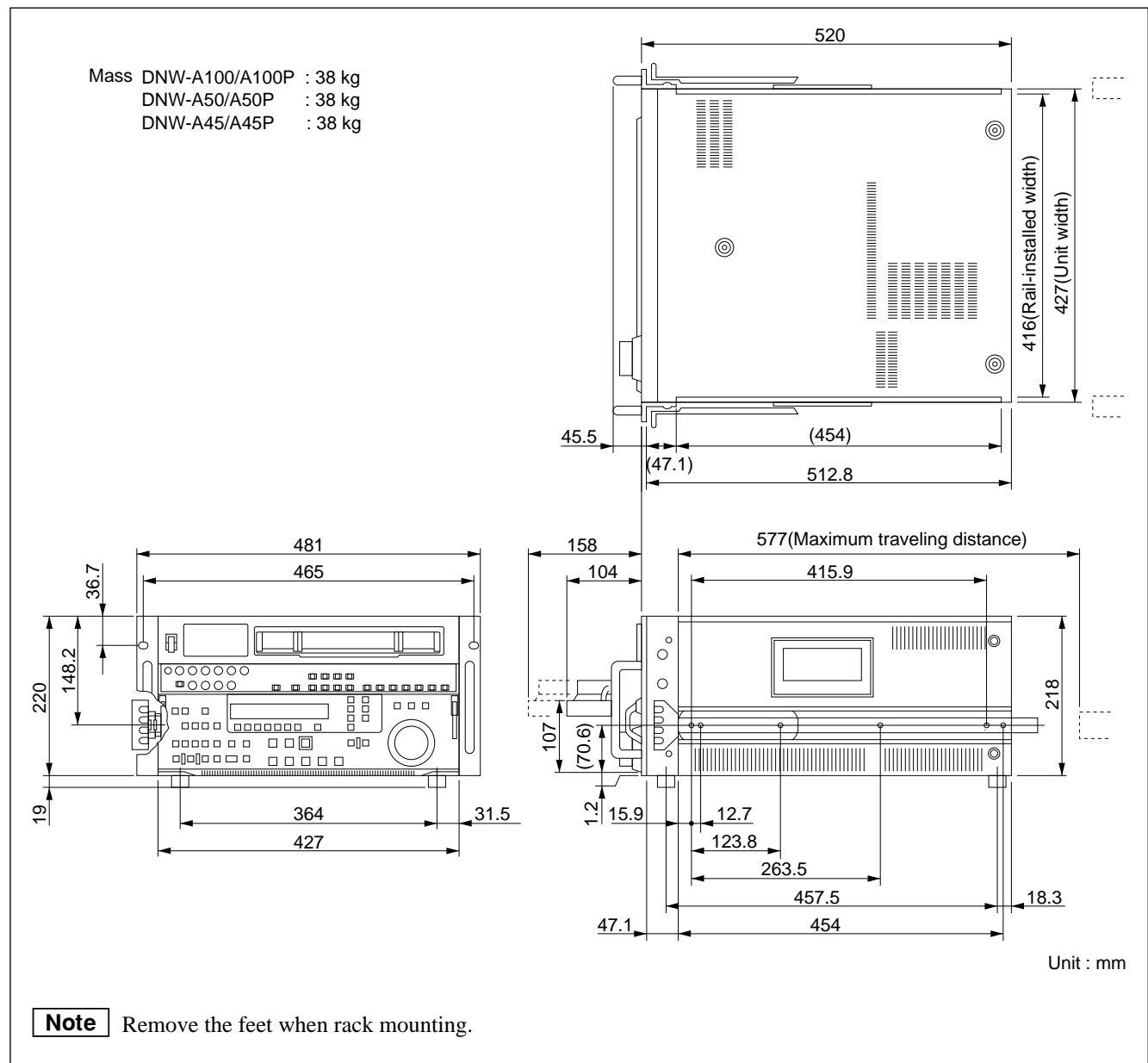
The work area must be secured in consideration of the service operation. Especially, the rear side must be at least 40 cm away from the walls for ventilation.

When the unit is operated on a desk or similar condition, assure that the clearance from the upper lid and the right side panel is at least 4 cm.

However, it is recommended that the clearance above the unit is more than 40 cm in consideration of the service operation.

### Note

For the operation with the upper lid removed, the air cooling effect using the fan decreases. Complete the work in a short time as far as possible when the unit is operated for inspection with the upper lid removed. Blow a wind using an electric fan so as to suppress an increase in temperature when the work is continued for a long time with the power turned on.



Dimensions when Rack-Mounting

# 1-6. Rack Mounting

Explains how to mount this unit in a 19-inch standard rack. Install this unit in a rack accurately as following procedure using specified rack mount rail.

If not, there is a fear of unexpected accident such as a drop of the unit or turnover of the rack.

## Specified Rack Mount Kit

RMM-111 (Option) or  
RMM-110 (Option)

### CAUTION

Use the specified rack mount rail.

If not, injury could occur by drop of the unit because strength of rail is not enough.

### Note

The color of rack angle of RMM-111 fits to the unit.

RMM-110 is the same consistence, strength and dimension as RMM-111, but the color of rack angle is different.

## Parts Packed in RMM-110/111

- Slide rail ..... 2
- Rack angle (handle)..... 2
- Rail bracket ..... 4
- Plate nut (large) ..... 4
- Plate nut (small) ..... 4
- Screw (PSW4 × 16) ..... 4
- Screw (B4 × 8)..... 8
- Hexagon socket head cap screw ..... 8
- Flat washer ..... 8
- Screw (RK5 × 14) ..... 2
- Ornamental washer..... 2
- L-shaped hexagon wrench..... 1

## Notes on Rack Mounting

- Adjust so that the temperature inside the rack is in the range of the unit's operating temperature.
- To prevent turning over the rack, fix the rack on the horizontal and firm floor securely using the bolts.
- Never remove the upper lid, bottom plate, and so on during rack mounting.
- Connect long enough cables on the connector panel, considering that the unit is pulled out from the rack.
- When other unit with built-in hard disk drive is already installed in the rack for mounting this unit, turn off the power of the unit which is already installed before mounting this unit in the rack.

## Rack Mounting Procedure

### • Remove of feet

#### CAUTION

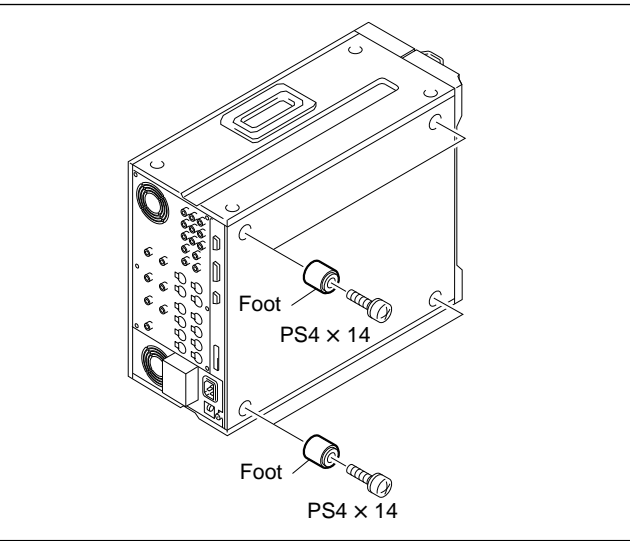
Move the unit as gently as possible to avoid shock to the hard disk drive. Pay particular attention to move of this unit without feet.

- (1) Place the unit on its right side panel down.

#### Note

Lend your hand so that the lower handle does not hang down.

- (2) Unscrew the four screws and remove the feet from the bottom plate of the unit.
- (3) Replace the unit to the horizontal position.



#### CAUTION

Keep these screws and the feet that are removed in this procedure carefully.

Be sure to attach the feet if the unit is used after removing from the rack.

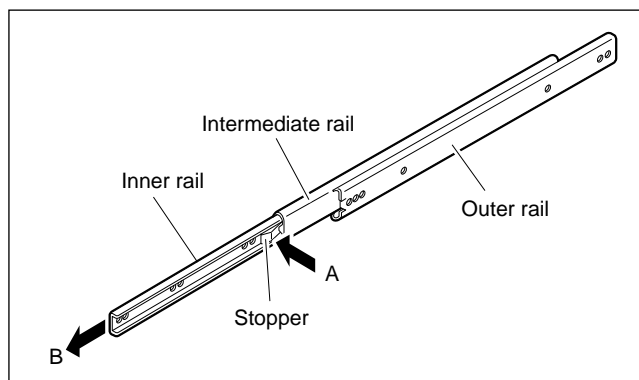
If not, the hard disk drive may break down by mechanical vibration, shock, etc.

Tighting torque: 9.8 N•cm { 10 kgf•cm }



### • Attachment of inner rails

- (4) Pull out the inner rails from the two intermediate rails.
- (5) While pressing the stopper of the inner rail in the direction of the arrow A in the figure, pull out it in the direction of the arrow B. (Pull out the other inner rail in the same way.)

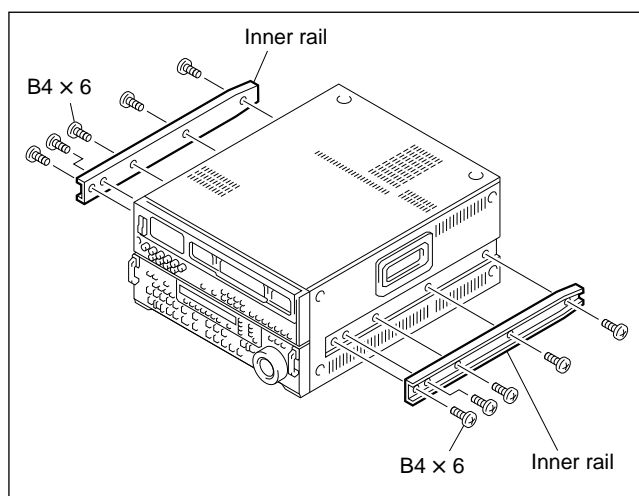


- (6) Remove the ten screws from both sides (left and right) of the unit shown in the figure.
- (7) Attach the two inner rails to both sides (left and right) of the unit using the screws removed in the procedure (6).

Tightening torque: 1.2 N·m {12.2 kgf·cm}

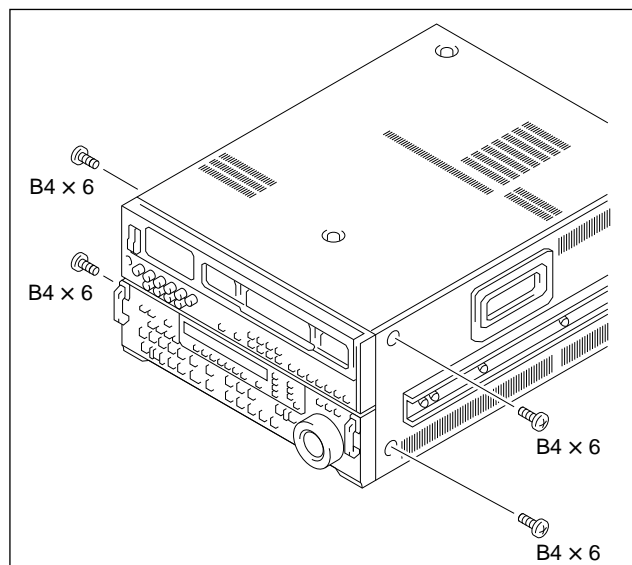
#### Note

Be sure to attach the inner rail using the screws (B4 × 6). If other screws are used, a failure occurs in the operation of the unit.



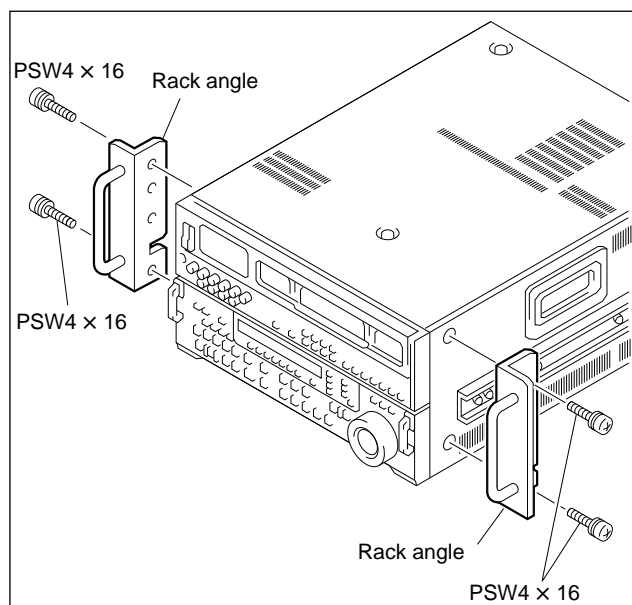
### • Attachment of rack angles (handles)

- (8) Remove the four screws (B4 × 6) in the figure from both sides (left and right) of the unit.



- (9) Attach the two rack angles to both sides (left and right) of the unit using the four screws (PSW 4 × 16) attached to the rack mount kit.

Tightening torque: 1.2 N·m {12.2 kgf·cm}



#### Note

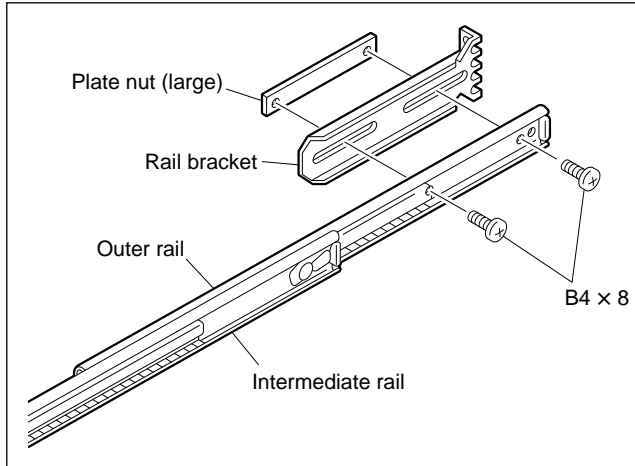
Keep these screws (B4 × 6) that are removed in the procedure (8) carefully.

Be sure to use these screws when directly attaching the side panel by screws after removing the rack angles.

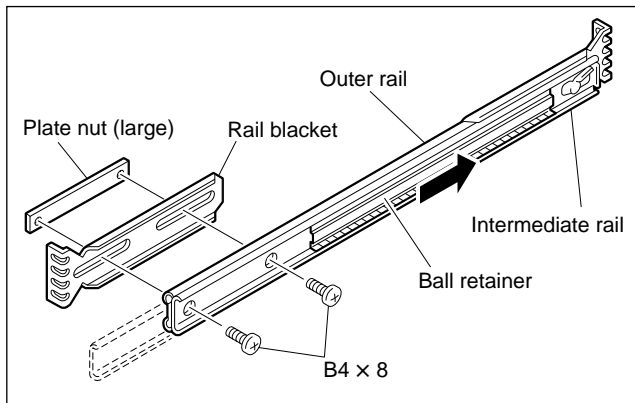
If the rack angle fixing screws (PSW 4 × 16) are used by mistake, a failure occurs in the operation of the unit because they are longer than the (B4 × 6) screws.

• **Temporary attachment of rail brackets**

(10) Stagger the outer rail and the intermediate rail as shown in the figure. And attach the rail bracket to the outer rail temporarily using the plate nuts (large) and the two screws. (Attach the rail bracket to the other outer rail temporarily in the same way.)



(11) Stagger the ball retainer as shown in the figure. And attach the rail bracket to the outer rail temporarily using the plate nuts (large) and the two screws. (Attach the rail bracket to the other outer rail temporarily in the same way.)

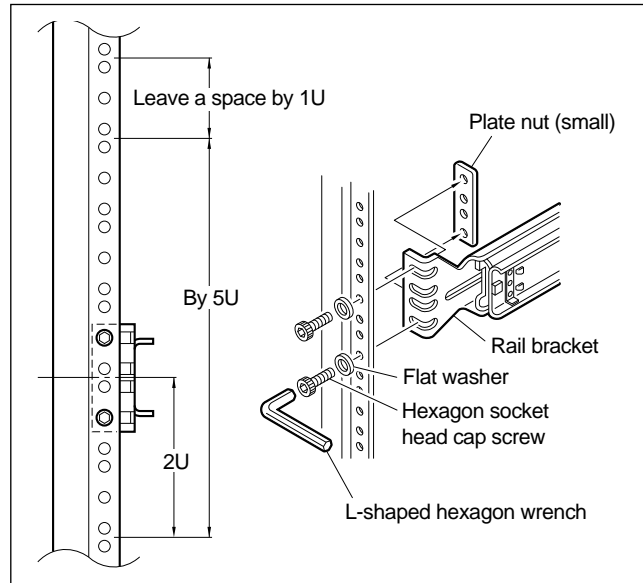


• **Attachment of outer rails**

(12) As shown in the figure, fix the outer rails on both sides (left and right) temporarily to the 2U position from the bottom of the space by 5U for installing this unit, with eight hexagon socket head cap screws and eight flat washers (front and rear, and right and left positions).

**Note**

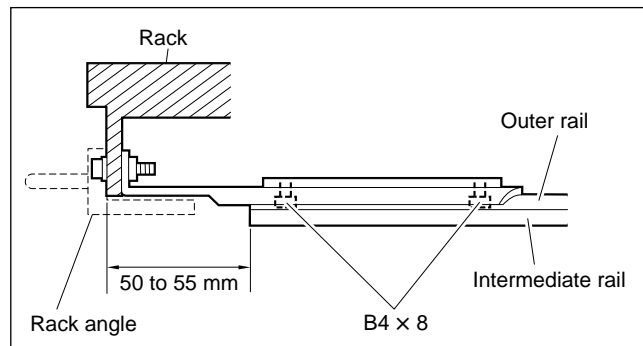
Be sure to leave a space on the top of this unit by 1U to reduce an increase in the internal temperature of this unit.



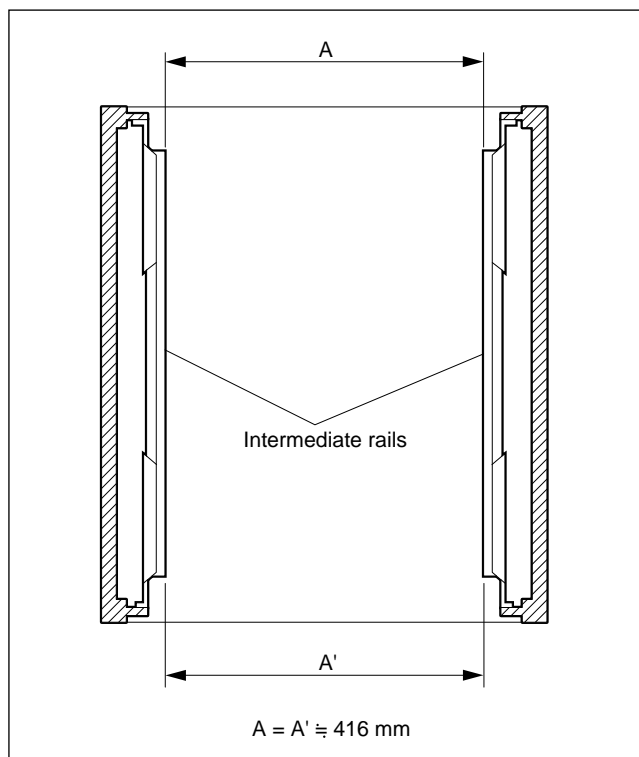
(13) Adjust the position of rails on both sides (left and right) so that the distance from the surface of the rack to the tip of the rail become 50 to 55 mm.

(14) Tighten the screws (four positions, total eight) attaching the rail bracket temporarily using the following tightening torque.

Tightening torque: 1.2 N·m { 12.2 kgf·cm }



- (15) Be sure that the distance between the intermediate rails on both sides (left and right) satisfy the specifications.



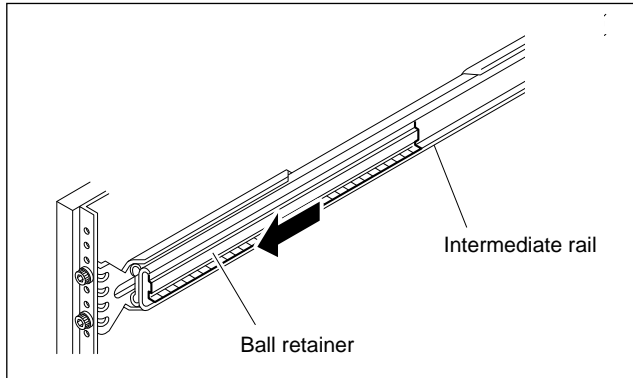
- (16) Tighten the hexagon socket head cap screws (four positions, total eight) attaching the outer rails to the rack temporarily using the L-shaped hexagon wrench.

## • Mounting in rack

### CAUTION

Have two or more persons to do this work.

(17) Stagger the ball retainers of intermediate rails on both sides (left and right) toward you.



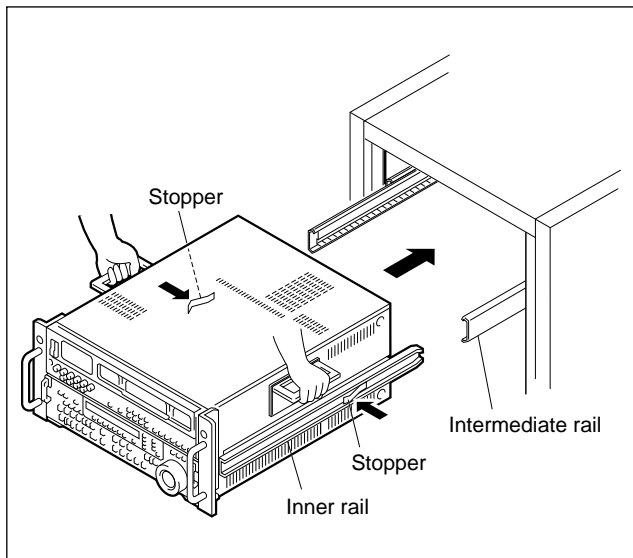
(18) Pull the rails out equal length from both sides (left and right) .

(19) Lift the unit holding the handles, insert the inner rails into the intermediate rails slowly.

(20) While pressing the stoppers on the both sides (left and right) , push the unit into the rack slowly.

### Note

Exercise care to avoid catching your finger or hand in rack mount rail.



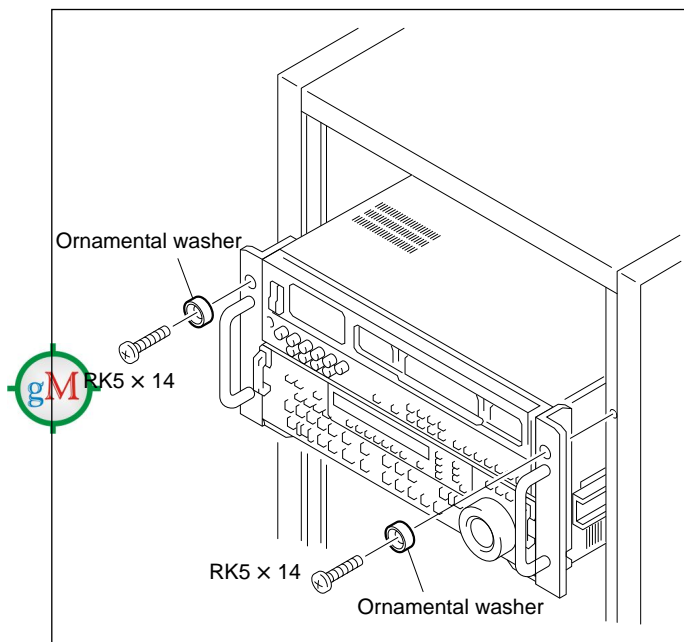
(21) Take the unit in and out from the rack about three times and be sure that slide rail moves smoothly. If slide rail does not move smoothly, remove the unit and go back to “Attachment of outer rails” (procedure 12).

### CAUTIONS

- Have two or more persons to remove.
- This unit does not have the feet in this operation. When you put down this unit from the rack, be careful not to give a shock to it.

(22) Fix the unit to the rack using two screws and two ornamental washers.

Tightening torque: 1.2 N•m { 12.2 kgf•cm }



## 1-7. Connecting Connector/Cable

When external cables are connected to the connector of this unit, the hardware listed below (or equivalents) must be used.

DNW-A100 side connector/ panel indication	Maching connector/cable	Sony part No.
VIDEO INPUT	BNC 75Ω, MALE	—
VIDEO OUTPUT	BNC 75Ω, MALE	—
DIGITAL INPUT	BNC 75Ω, MALE <sup>(Note1)</sup>	—
DIGITAL OUTPUT	BNC 75Ω, MALE <sup>(Note1)</sup>	—
AUDIO INPUT	XLR 3P, MALE	1-508-084-00
AUDIO OUTPUT	XLR 3P, FEMALE	1-508-083-00
AES/EBU <sup>(Note2)</sup>	BNC 75Ω, MALE <sup>(Note3)</sup>	—
TIME CODE IN	XLR 3P, MALE	1-508-084-00
TIME CODE OUT	XLR 3P, FEMALE	1-508-083-00
MONITOR OUTPUT	XLR 3P, FEMALE	1-508-083-00
VIDEO CONTROL	D-SUB 15P, FEMALE and JUNCTION SHELL 15P	1-561-610-21 1-561-929-00
RS-232C	D-SUB 25P, MALE	1-566-356-11
REMOTE-IN (9P)	9P remote control cable	1-751-019-81 (Supplied with this unit)
SCSI <sup>(Note4)</sup>	Differential 68P (SCSI-2) cable or SCSI terminal connector	Pending (Supplied with extended hard disk) 1-774-818-11 (Supplied with this unit)
PHONE <sup>(Note5)</sup>	JM-60 stereo phone plug	—

Note 1: Coaxial cable length : max. 200 m

It is recommended to connect the BELDEN8281 cable or equivalent to this connector.

Note 2: With operation kit BKNW-105.

Note 3: Coaxial cable length : max. 1000 m

It is recommended to connect the BELDEN8281 cable or equivalent to this connector.

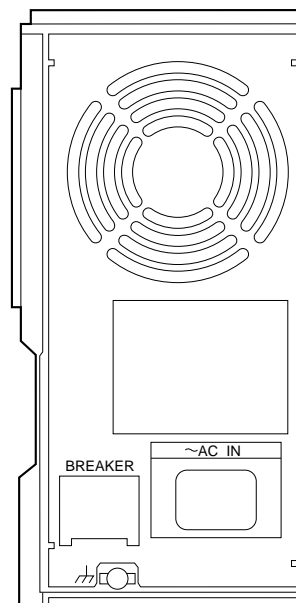
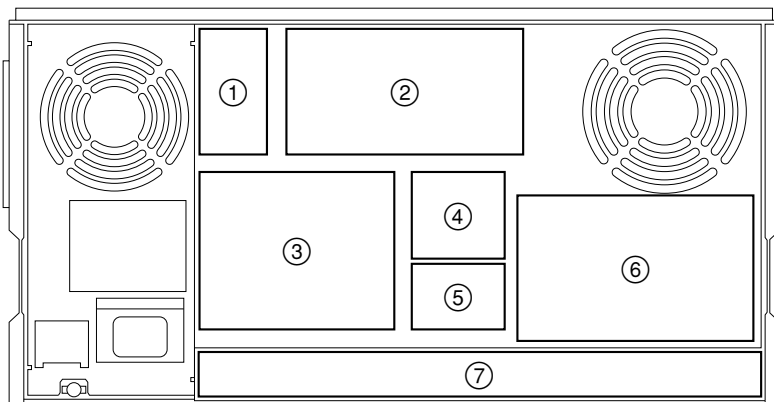
Note 4: Connects the disk array cable supplied with extended hard disk.

If not, connect the SCSI terminal connector supplied with this unit.

Note 5: It exists on the front (upper control panel) .

## 1-8. Signal Inputs and Outputs

< Reduced drawing of rear panel >



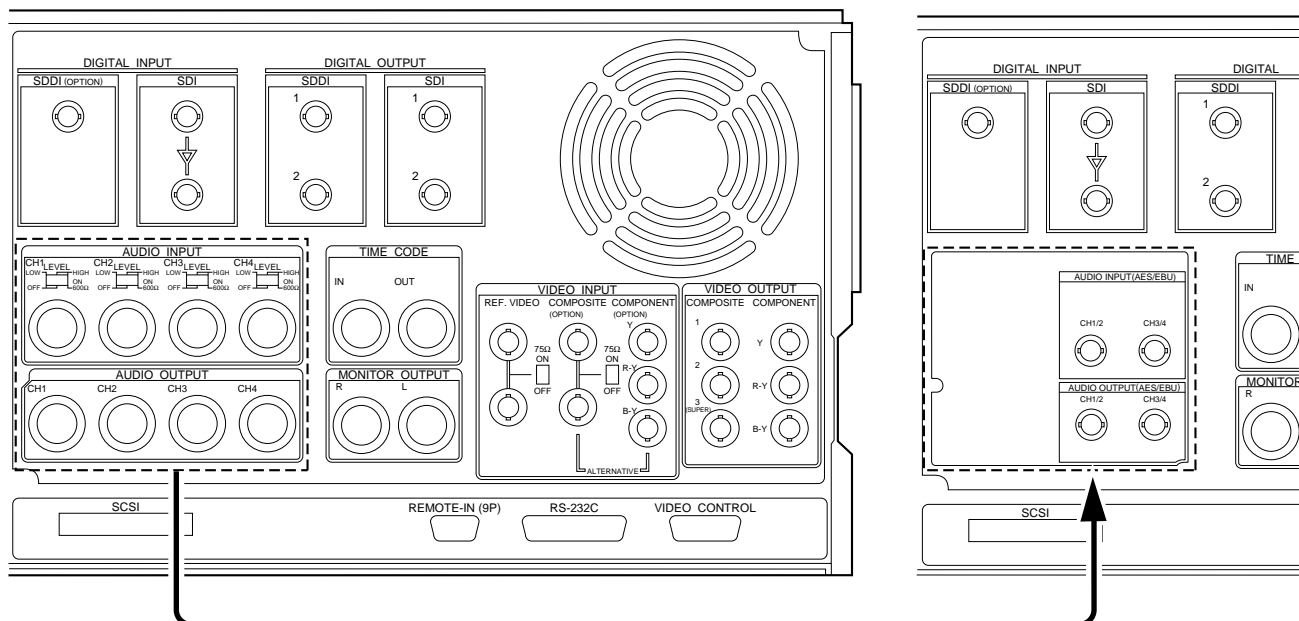
### Communications connector

⑦ SCSI	68P connector Differential type bus (SCSI-2)
⑦ REMOTE-IN (9P)	D-SUB 9P connector (RS-422A interface) Remote control
⑦ RS-232C	D-SUB 25P connector (RS-232C interface) for ISR (Interactive Status Reporting system)

### Input connector

① SDDI DIGITAL (for DNW-A100/A100P only)	BNC × 1 (Optional kit BKNW-103) Component digital (270 Mbit/s) in conformity to MPEG2 4: 2: 2 P@ML
② SDI DIGITAL	BNC × 1 (active through out × 1) Component digital (270 Mbit/s) in conformity to SMPTE 259M & CCIR656-III
③ AUDIO CH1/2/3/4 (Standard)	XLR3-pin × 4 Analog audio 4 channels LOW OFF : -60 dBu, high impedance, balanced HIGH OFF : +4 dBu (Standard), high impedance, balanced HIGH ON : +4 dBm (Standard), 600 Ω termination, balanced
AUDIO CH1/2, 3/4 (with optional kit BKNW-105)	BNC × 2 Digital audio 4 channels AES/EBU format, 2 channel mode, 1.0 V p-p, 75 Ω
④ TIME CODE IN	XLR3-pin × 1 Time code 0.5 to 18 V p-p, 10 kΩ, balanced
⑥ REF.VIDEO INPUT	BNC × 2 in loop through connection Outside reference video signal (Black burst or composite sync) 0.3 V p-p, 75 Ω, sync negative
⑥ COMPOSITE VIDEO (Usable with optional board BKDW-505/506)	BNC × 2 in loop through connection BNC × 2 in loop through connection Analog composite video 1.0 V p-p, 75 Ω, sync negative
⑥ COMPONENT VIDEO (Usable with optional board BKNW-104)	BNC × 3 (1 set) Analog component video Y : 1.0 V p-p, 75 Ω, sync negative R-Y/B-Y : 0.7 V p-p, 75 Ω
⑦ VIDEO CONTROL	D-SUB 15P connector Digital video proccess control input

&lt; Rear panel &gt;



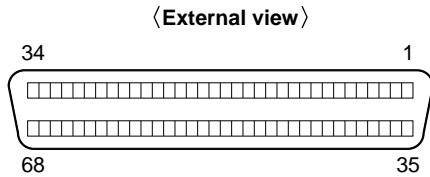
**Note** This figure is for DNW-A100 with BKNW-103.

(With optional kit BKNW-105)

### Output connector

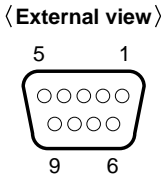
② SDDI DIGITAL (for DNW-A100/A100P only)	BNC × 2 Component digital (270 Mbit/s) in conformity to MPEG2 4: 2: 2 P@ML
② SDI DIGITAL	BNC × 2 Component digital (270 Mbit/s) in conformity to SMPTE 259M & CCIR656-III
③ AUDIO CH1/2/3/4 (Standard)	XLR3-pin × 4 Analog audio 4 channels +4 dBm (Standard) (600 Ω load), low impedance, balanced
AUDIO CH1/2, 3/4 (with optional kit BKNW-105)	BNC × 2 Digital audio 4 channels AES/EBU format, 2 channel mode, 1.0 V p-p, 75 Ω
④ TIME CODE OUT	XLR3-pin × 1 Time code 2.2 V p-p, low impedance, balanced
⑤ MONITOR R/L	XLR3-pin × 2 Analog audio +4 dBm (Standard) (600 Ω load), low impedance, balanced
⑥ COMPOSITE VIDEO	BNC × 3 (including 1 for character superimpose) Analog composite video 1.0 V p-p, 75 Ω, sync negative
⑥ COMPONENT VIDEO	BNC × 3 (1 set) Analog component video Y : 1.0 V p-p, 75 Ω, sync negative R-Y/B-Y : 0.7 V p-p, 75 Ω
PHONE (Upper control panel)	JM-60 stereo phone jack Analog audio up to -12 dBu (8 Ω load), unbalanced

SCSI: 68-pin (female)



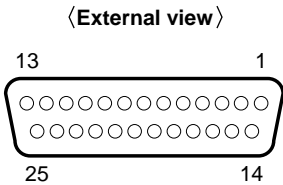
Pin No.	Signal	Pin No.	Signal
1	+DB(12)	35	−DB(12)
2	+DB(13)	36	−DB(13)
3	+DB(14)	37	−DB(14)
4	+DB(15)	38	−DB(15)
5	+DB(P1)	39	−DB(P1)
6	GND	40	GND
7	+DB(0)	41	−DB(0)
8	+DB(1)	42	−DB(1)
9	+DB(2)	43	−DB(2)
10	+DB(3)	44	−DB(3)
11	+DB(4)	45	−DB(4)
12	+DB(5)	46	−DB(5)
13	+DB(6)	47	−DB(6)
14	+DB(7)	48	−DB(7)
15	+DB(P)	49	−DB(P)
16	DIFFSENS	50	GND
17	TERMPWR	51	TERMPWR
18	TERMPWR	52	TERMPWR
19	RESERVED	53	RESERVED
20	+ATN	54	−ATN
21	GND	55	GND
22	+BSY	56	−BSY
23	+ACK	57	−ACK
24	+RST	58	−RST
25	+MSG	59	−MSG
26	+SEL	60	−SEL
27	+C/D	61	−C/D
28	+REQ	62	−REQ
29	+I/O	63	−I/O
30	GND	64	GND
31	+DB(8)	65	−DB(8)
32	+DB(9)	66	−DB(9)
33	+DB(10)	67	−DB(10)
34	+DB(11)	68	−DB(11)

REMOTE-IN (9P): 9-pin (female)



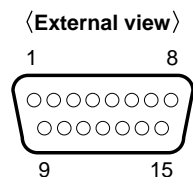
Pin No.	Signal
1	GND
2	RM TX(−)
3	RM RX(−)
4	GND
5	PRIORITY
6	GND
7	RM TX(+)
8	RM RX(+)
9	GND

RS-232C: 25-pin (female)



Pin No.	Signal
1	FG ; Frame Ground
2	TXD ; Transmitted Data (Output)
3	RXD ; Received Data (Input)
4	RTS ; Request to Send (Output)
5	CTS ; Clear to Send (Input)
6	DSR ; Data Set Ready (Input)
7	SG ; Signal Ground
8	DCD ; Data Carrier Detect (Input)
9 to 19	NC
20	DTR ; Data Terminal Ready (Output)
21 to 25	NC



**VIDEO CONTROL: 15-pin (male)**

Pin No.	Signal	Terminal voltage (V)
1	SYNC CONT (Input)	−5 to +5
2	HUE CONT (Input)	−5 to +5
3	SC CONT (Input)	−5 to +5
4	VIDEO LEVEL CONT (Input)	−5 to +5
5	SETUP CONT (Input)	−5 to +5
6	CHROMA LEVEL CONT (Input)	−5 to +5
7	REG −12V (Output)	−12
8	GND	—
9 to 12	NC	—
13	Y/C DELAY CONT (Input)	−5 to +5
14	NC	—
15	REG +12V (Output)	+12

**1-9. Switch Settings on Connector Panel**

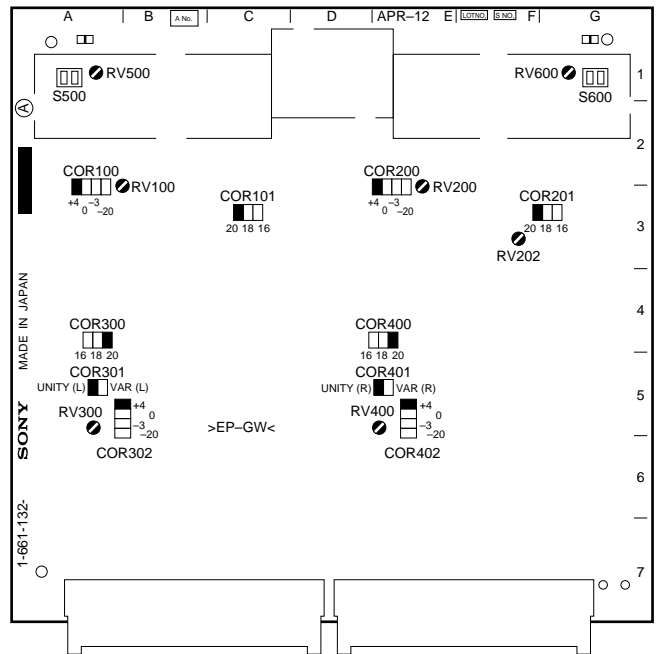
When the unit is installed, be sure to perform the following setup.

Refer to the Operation manual “Section 2 Location and Function of Parts” for setup.

- Analog audio input level/600  $\Omega$  termination switches
- 75  $\Omega$  termination switch of reference video input
- 75  $\Omega$  termination switch of composite video input (Operates when equipping with optional board BKDW-505/506.)

# 1-10. Switch and Shorting Plug Setting on PC Boards

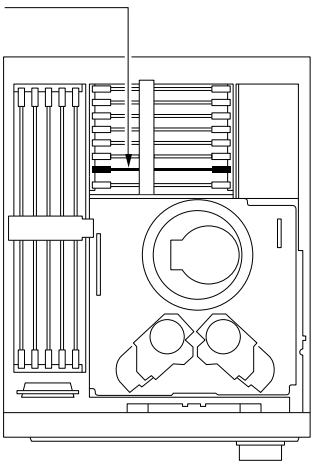
## 1-10-1. APR-12 Board



APR-12 Board (A Side)

### Note

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.



< Top View >

### HEAD TUNE switch (For Betacam/Betacam SP longitudinal audio playback)

It is not necessary to change the setting of this switch, when installing.

Channel	Ref. No.	Description
CH1	S500	By coupling with RV500, adjust the CH1 head amp high frequency response. This switch is used in audio head dumping adjustment. When the unit is shipped, this switch is set to the position based on the adjustment condition.
CH2	S600	By coupling with RV600, adjust the CH2 head amp high frequency response. This switch is used in audio head dumping adjustment. When the unit is shipped, this switch is set to the position based on the adjustment condition.

### Audio input level (CH1, CH2) setting

Input levels (CH3, CH4) are set on the APR-13 board.

Channel	Ref. No.	Display	Input level (dBm/600 Ω) [ ]: Factory setting				Fine adjustment
			[+4]	0	−3	−20	
CH1	COR100	+4	Short	Open	Open	Open	RV100
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
CH2	COR200	+4	Short	Open	Open	Open	RV200
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	

**Audio input headroom (CH1, CH2) setting**

Input headrooms (CH3, CH4) are set on the APR-13 board.

Channel	Ref. No.	Display	Input headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	18	16	
CH1	COR101	20	Short	Open	Open	RV100
		18	Open	Short	Open	
		16	Open	Open	Short	
CH2	COR201	20	Short	Open	Open	RV200
		18	Open	Short	Open	
		16	Open	Open	Short	

**Monitor output level setting**

Channel	Ref. No.	Display	Output level (dBm/600 Ω) [ ]: Factory setting				Fine adjustment
			[+4]	0	−3	−20	
L	COR302	+4	Short	Open	Open	Open	RV300
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
R	COR402	+4	Short	Open	Open	Open	RV400
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	

**Monitor output headroom setting**

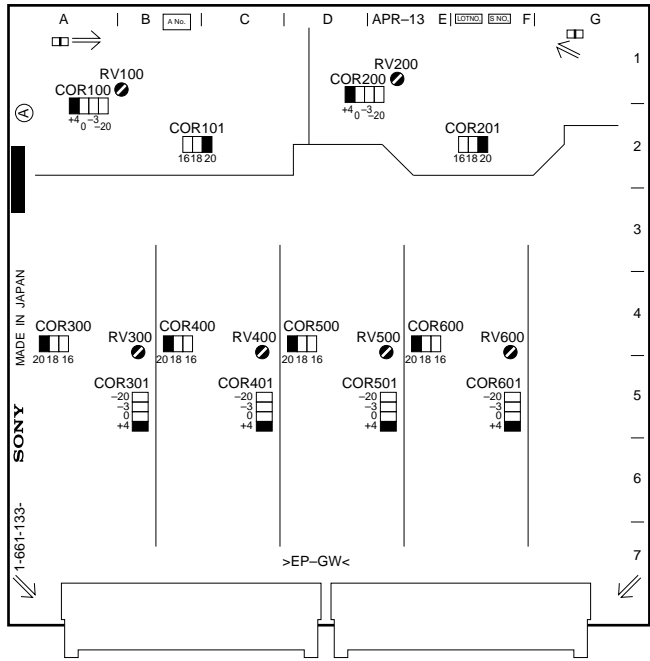
Channel	Ref. No.	Display	Output headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	18	16	
L	COR300	20	Short	Open	Open	RV300
		18	Open	Short	Open	
		16	Open	Open	Short	
R	COR400	20	Short	Open	Open	RV400
		18	Open	Short	Open	
		16	Open	Open	Short	

**Selecting fixed or variable monitor output level**

When the level variable is selected, the level is adjusted with the PHONE level control.

Channel	Ref. No.	Display	Monitor output level [ ]: Factory setting	
			[Fixed]	Variable
L	COR301	UNITY(L)	Short	Open
		VAR(L)	Open	Short
R	COR401	UNITY(R)	Short	Open
		VAR(R)	Open	Short

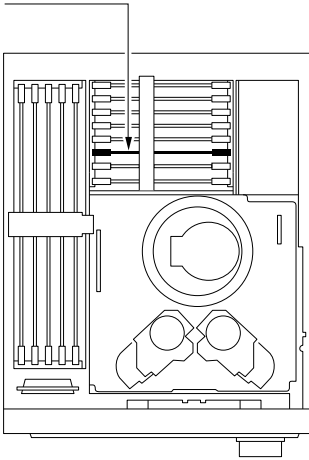
1-10-2. APR-13 Board



APR-13 Board (A Side)

**Note**

Refer to “2-13. Pulling Out/  
Insertion of Plug-in Board” for  
pulling out and insertion of board.



< Top View >

**Audio input level (CH3, CH4) setting**

Audio input levels (CH1, CH2) are set on the APR-12 board.

Channel	Ref. No.	Display	Input level (dBm/600 Ω) [ ]: Factory setting				Fine adjustment
			[+4]	0	−3	−20	
CH3	COR100	+4	Short	Open	Open	Open	RV100
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
CH4	COR200	+4	Short	Open	Open	Open	RV200
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	

**Audio input headroom (CH3, CH4) setting**

Input headrooms (CH1, CH2) are set on the APR-12 board.

Channel	Ref. No.	Display	Input headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	18	16	
CH3	COR101	20	Short	Open	Open	RV100
		18	Open	Short	Open	
		16	Open	Open	Short	
CH4	COR201	20	Short	Open	Open	RV200
		18	Open	Short	Open	
		16	Open	Open	Short	

**Audio output level setting**

Channel	Ref. No.	Display	Output level (dBm/600 $\Omega$ ) [ ]: Factory setting				Fine adjustment
			[+4]	0	−3	−20	
CH1	COR301	+4	Short	Open	Open	Open	RV300
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
CH2	COR401	+4	Short	Open	Open	Open	RV400
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
CH3	COR501	+4	Short	Open	Open	Open	RV500
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
CH4	COR601	+4	Short	Open	Open	Open	RV600
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	

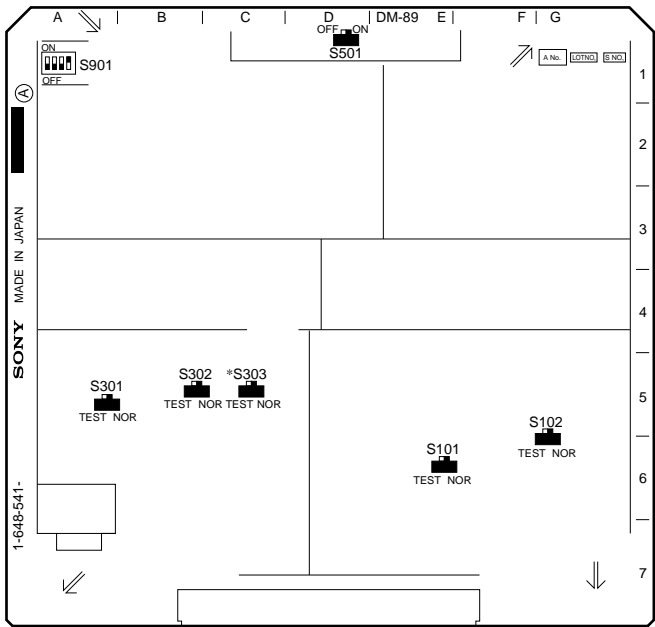
**Audio output headroom setting**

Channel	Ref. No.	Display	Output headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	18	16	
CH1	COR300	20	Short	Open	Open	RV300
		18	Open	Short	Open	
		16	Open	Open	Short	
CH2	COR400	20	Short	Open	Open	RV400
		18	Open	Short	Open	
		16	Open	Open	Short	
CH3	COR500	20	Short	Open	Open	RV500
		18	Open	Short	Open	
		16	Open	Open	Short	
CH4	COR600	20	Short	Open	Open	RV600
		18	Open	Short	Open	
		16	Open	Open	Short	

1-10-3. DM-89 Board

**Note**

Never change the settings of the factory use switches.

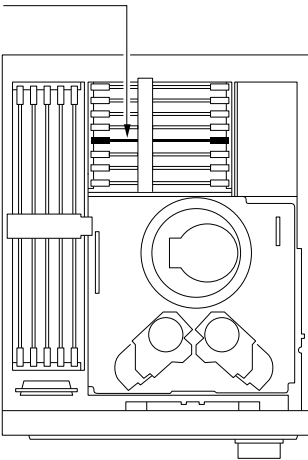


DM-89 Board (A Side)



**Note**

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.



< Top View >

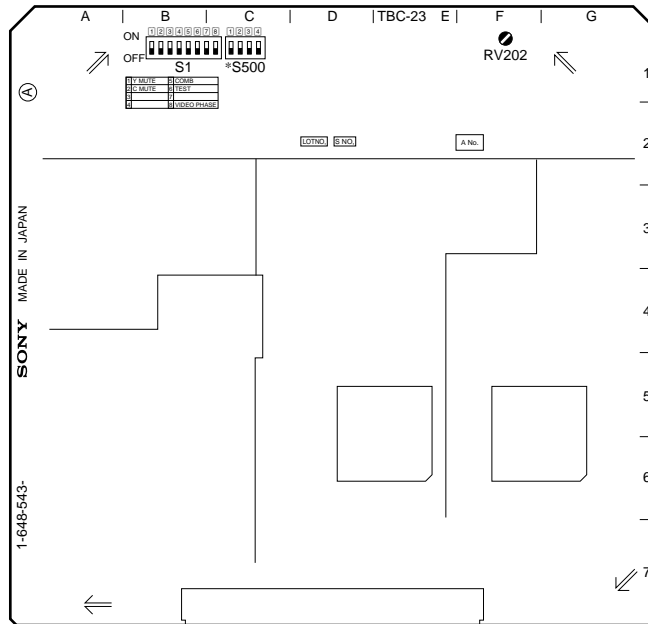
DM-89 board switch

Switch No.	Name	Description	Factory setting
S101	Y-RF LPF & EQ TEST (Y-RF low-pass filter & equalizer test)	The Y-RF low-pass filter & equalizer test signal connection switch To adjust: Select the TEST position. Connect the input signal to TP103. (GND to E102)	NORMAL POSITION
S102	—————	Factory use	NORMAL POSITION
S301	C-RF LPF & EQ TEST (C-RF low-pass filter & equalizer test)	The C-RF low-pass filter & equalizer test signal connection switch To adjust: Select the TEST position. Connect the input signal to TP303. (GND to E302)	NORMAL POSITION
S302	—————	Factory use	NORMAL POSITION
S501	—————	Factory use	ON
S901	1	RF adjustment switch RF adjustment use OFF (OPEN): Normal mode ON (CLOSE): Adjustment and test modes	OFF (OPEN)
	2	—————	Factory use OFF (OPEN)
	3	—————	Factory use OFF (OPEN)
	4	—————	Factory use ON (CLOSE)

### 1-10-4. TBC-23 Board

**Note**

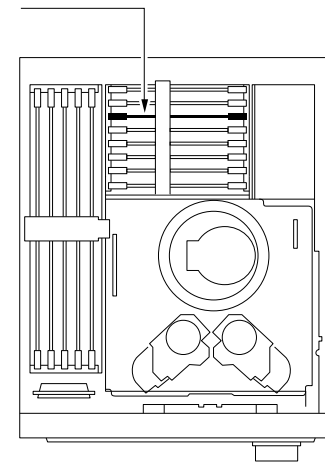
Never change the settings of the factory use switches.



TBC-23 Board (A Side)

**Note**

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.



< Top View >

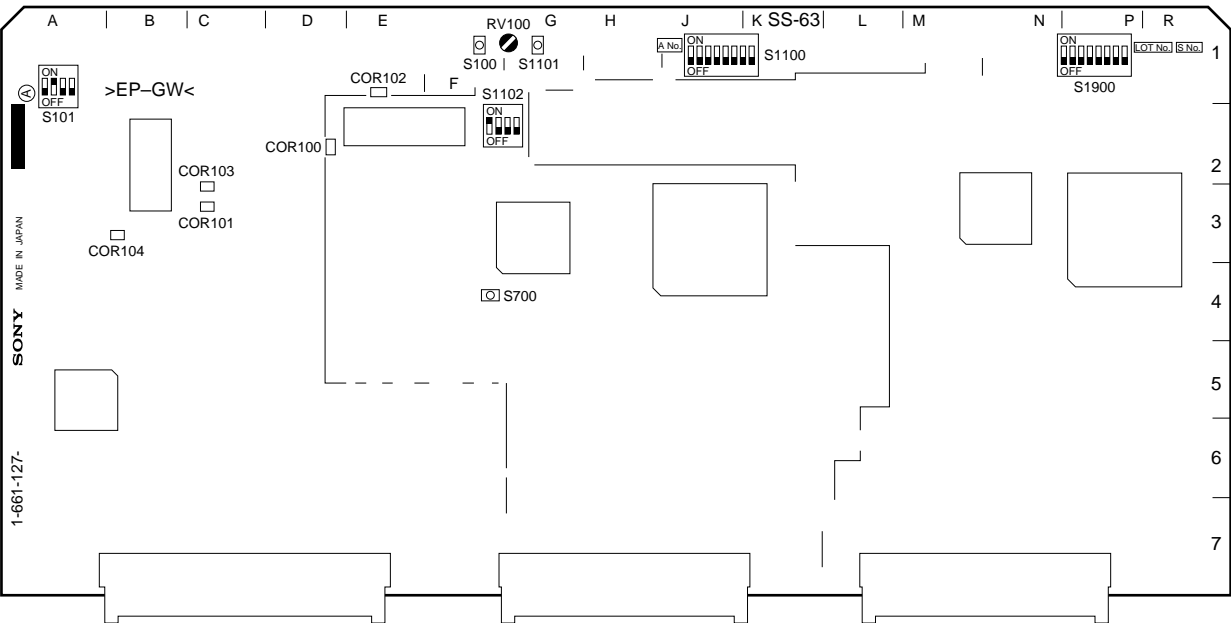
#### TBC-23 board switch

Switch No.	Name	Description	Factory setting
S1	1	Y MUTE	OFF (OPEN) : Normal mode ON (CLOSE) : Muting luminance signal
	2	C MUTE	OFF (OPEN) : Normal mode ON (CLOSE) : Muting color difference signal
	3	————	Factory use
	4	————	Factory use
	5	COMB	Selection whether to select a comb filter when the color difference signal has significant line crawl which cannot be corrected by LCC or not. OFF (OPEN) : Comb filter OFF ON (CLOSE) : Comb filter ON
	6	TBC TEST	Selection whether to enable the TBC-23 and -24 boards self diagnostics or not. OFF (OPEN) : Normal mode ON (CLOSE) : Test (self diagnostics) mode
	7	————	Factory use
	8	VIDEO PHASE	Selection whether to use VIDEO PHASE VR or not. OFF (OPEN) : VIDEO PHASE VR (RV202) disabled ON (CLOSE) : VIDEO PHASE VR (RV202) enabled
S500	1	————	Factory use
	4	————	Factory use

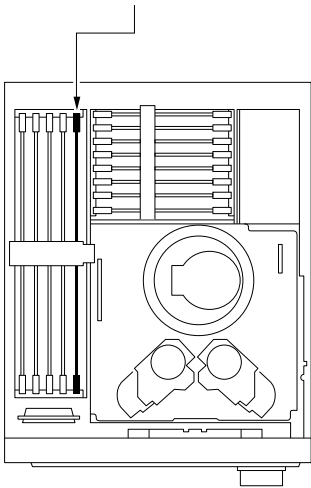
1-10-5. SS-63 Board

Note

Never change the settings of the factory use switches/short plugs.



SS-63 Board (A Side)



< Top View >

Note

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.

SS-63 board short plug

Ref. No.	Name	Description	Factory setting
COR 100	_____	Factory use	OPEN
COR 101	_____	Factory use	OPEN
COR 102	_____	Factory use	OPEN
COR 103	_____	Factory use	SHORT *
COR 104	_____	Factory use	SHORT *

\* : COR103 and 104 have no plug, but they are shorted by patterns.



**SS-63 board switch**

Switch No.	Name	Description	Factory setting
S100	REEL POSITION	Press this switch when changing the reel position. This switch does not operate in the state of installing the cassette compartment	_____
S101	1 FLASH MEMORY	<b>Note</b> Do not change the setting of this switch during installation. Select the operation mode of flash memory OFF (OPEN) : Normal mode ON (CLOSE) : Writing mode	OFF (OPEN)
	2 ANA AUTO-TRACKING	Select whether to enable auto tracking operation or not during playing back the tape recorded based on the Betacam/Betacam SP format. OFF (OPEN) : Not operate ON (CLOSE) : Operates <b>Note</b> The Betacam SX tape playback is carried out by non-tracking operation.	ON (CLOSE)
	3 ANA DISABLE	Select whether to prohibit analog Betacam tape playback or not. OFF (OPEN) : Enable ON (CLOSE) : Disable	OFF (OPEN)
	4 SV ERR DISABLE	<b>Note</b> Do not change the setting of this switch during installation. This switch selects whether to disable the detection of a malfunction error in a servo circuit. OFF (OPEN) : Enable (normal) ON (CLOSE) : Disable	OFF (OPEN)
S700	SYSTEM RESET	Press this switch when resetting system control operation.	_____
S1100	1 EXTENDED MENU	OFF (OPEN) : Not display extended menu of set up menu ON (CLOSE) : Displays extended menu of set up menu	OFF (OPEN)
	2 MAINTENANCE MODE ACCESS	OFF (OPEN) : Not enter into maintenance mode from lower control panel ON (CLOSE) : Enters into maintenance mode from lower control panel	OFF (OPEN)
	3 _____   8	Factory use	OFF (OPEN)
S1101	MAINTENANCE MODE START	Press this switch when starting maintenance mode	_____
S1102	<b>Note</b> Never change the settings of the S1102 switch since each switch is set according to the characteristics of the unit. But set this switch according to each unit when replacing the board.		
	1, 2 MODEL ID SWITCH	<div> <div>Reserved</div> <div>DNW-A100/A100P</div> <div>DNW-A50/A50P</div> <div>DNW-A45/A45P</div> </div> <div> <div>1</div> <div>: OFF (OPEN)</div> <div>: OFF (OPEN)</div> <div>: ON (CLOSE)</div> <div>: ON (CLOSE)</div> </div> <div> <div>2</div> <div>OFF (OPEN)</div> <div>ON (CLOSE)</div> <div>OFF (OPEN)</div> <div>ON (CLOSE)</div> </div>	_____
	3 J/UC	OFF (OPEN) : Japan model ON (CLOSE) : Except Japan model	ON (CLOSE)
	4 525/625	OFF (OPEN) : 525/60 model ON (CLOSE) : 625/50 model	NTSC model : OFF (OPEN) PAL model : ON (CLOSE)
S1900	1 _____   8	Factory use	OFF (OPEN)

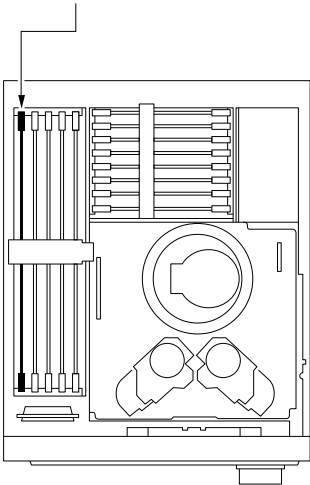
1-10-6. SSX-1 Board

Note

Never change the settings of the factory use switches.



SSX-1 Board (A Side)



< Top View >

Note

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.

SSX-1 board switch

Switch No.	Name	Description	Factory setting
S200	SYSTEM RESET	Press this switch to reset the operation of the SSX-1 board.	_____
S300	TEST	This switch is used for the test timing of the microcomputer on the SSX-1 board.	_____
S301	1   8	_____ Factory use	OFF (OPEN)

## 1-11. Mode Switching of Search Dial

There are two kinds of operation to switch the search dial of this unit to jog mode or shuttle mode.

### • SHUTTLE/JOG button selecting

When you press the SHUTTLE button, the digital video hybrid recorder is switched to shuttle mode.

When you press the JOG button, the digital video hybrid recorder is switched to jog mode.

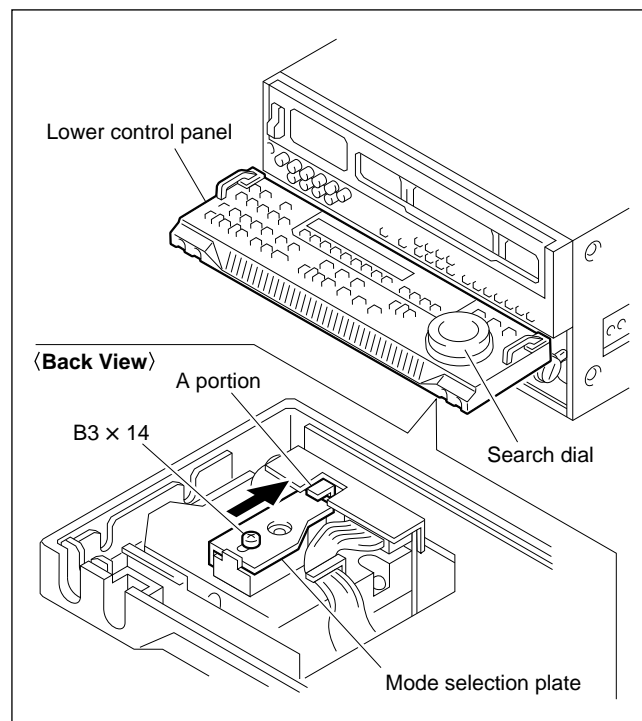
### • Search dial pressing

When you press the dial, the digital video hybrid recorder toggles between shuttle and jog modes.

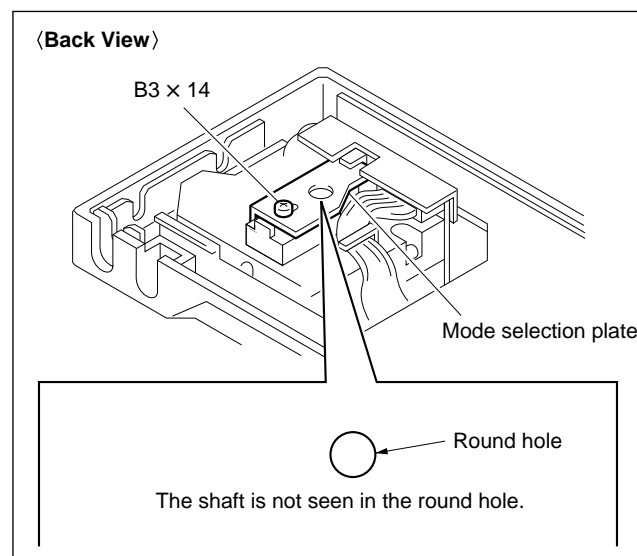
It is possible to prohibit a manner of toggling.

### Prohibiting Search Dial Pressing

1. Wait for 30 seconds after turning off the power.
2. Fix a lower control panel at 90°.
3. Loosen a screw on the backside of the search dial as shown in the figure.
4. Slide the mode selection plate in the direction indicated by the arrow until it touches the A portion.

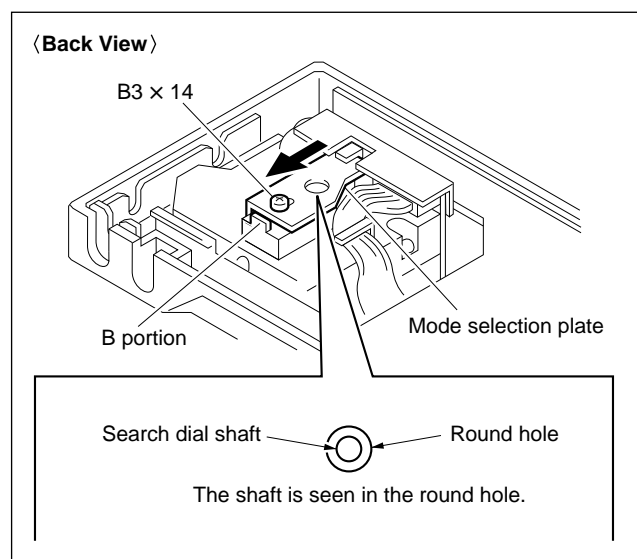


5. After checking that the shaft of the search dial is not seen in the round hole of the mode selection plate and then tighten the screw.



### Allowing Search Dial Pressing

1. Wait for 30 seconds after turning off the power.
2. Fix a lower control panel at 90°.
3. Loosen a screw on the backside of the search dial as shown in the figure.
4. Slide the mode selection plate in the direction indicated by the arrow until it touches the B portion.
5. After checking that the shaft of the search dial is seen in the round hole of the mode selection plate and then tighten the screw.



## 1-12. Setup Menu Items

The setup menu consists of a main menu and extended menu.

Refer to the Operation Manual for details of each menu.

### Note

It is required to adjust the switch setting of SS-63 board when allowing the system menu to display. Refer to “1-10-5. SS-63 Board”.

### Main Menu

#### ITEM-H00 series: Hours meter parameter

- H01: OPERATION HOURS
- H02: DRUM RUNNING HOURS
- H03: TAPE RUNNING HOURS
- H04: THREADING COUNTER
- H12: DRUM RUNNING HOURS (Resettable)
- H13: TAPE RUNNING HOURS (Resettable)
- H14: THREADING COUNTER (Resettable)
- H15: AIRFILTER OPERATION HOURS (Resettable)

#### ITEM-000 series: Operational parameter

- 001: PREROLL TIME
- 002: CHARACTER H-POSITION
- 003: CHARACTER V-POSITION
- 004: SYNCHRONIZE
- 005: DISPLAY INFORMATION SELECT
- 006: LOCAL FUNCTION ENABLE
- 007: TAPE TIMER DISPLAY
- 008: MONITORING SELECTION FOR VTR-TO-VTR EDIT
- 009: CHARACTER TYPE
- 011: CHARACTER V-SIZE
- 013: 525/625 SYSTEM SELECT

#### ITEM-B00 series: Bank operation parameter

- B01: RECALL BANK 1
- B02: RECALL BANK 2
- B03: RECALL BANK 3
- B04: RECALL BANK 4
- B11: SAVE BANK 1
- B12: SAVE BANK 2
- B13: SAVE BANK 3
- B14: SAVE BANK 4
- B20: RESET SETUP

### Extended Menu

#### ITEM-100 series: Operational panel parameter

- 101: SELECTION FOR SEARCH DIAL ENABLE
- 102: MAXIMUM TAPE SPEED (B-CAM)
- 104: AUDIO MUTING TIME
- 105: REFERENCE SYSTEM ALARM
- 106: CAPSTAN LOCK
- 107: REC INHIBIT LAMP FLASHING
- 108: AUTO EE SELECT
- 109: FORCED EE WHEN TAPE UNTHREAD
- 118: KEY INHIBIT SWITCH EFFECTIVE AREA
- 119: VARIABLE SPEED LIMIT IN KEY PANEL CONTROL
- 120: CTL LOCK IN VAR/SHTL
- 121: AUTO TRACKING IN SP MODE
- 122: AUTO EE WITH ANALOG TAPE
- 123: TAPE INDEX SELECT

#### ITEM-200 series: Remote interface parameter

- 201: PARA RUN

#### ITEM-300 series: Editing parameter

- 301: VAR SPEED RANGE FOR SYNCHRONIZATION
- 302: CAPSTAN RE-LOCKING DIRECTION
- 305: SYNC GRADE
- 307: AUTO-DELETION FOR INCONSISTENT DATA
- 308: SELECTION OF STD/NON-STD FOR COMPOSITE VIDEO IN
- 309: SERVO REFERENCE SELECT
- 310: REC INHIBIT
- 316: CONFIDENCE PB MODE
- 318: EDIT RETRY
- 320: AUDIO PB PROCESS

**ITEM-400 series: Preroll parameter**

- 401: FUNCTION MODE AFTER CUE-UP
- 403: AUTOMATIC PREROLL REFERENCE ENTRY
- 404: CUE-UP BY TC
- 405: CUE-UP BY CTL

**ITEM-500 series: Tape protection parameter**

- 501: STILL TIMER
- 502: TAPE PROTECTION MODE FROM SEARCH
- 503: TAPE PROTECTION MODE FROM STOP
- 504: DRUM ROTATION IN STANDBY OFF
- 505: STILL TENSION

**ITEM-600 series: Time code generator parameter**

- 601: VITC POSITION SEL-1
- 602: VITC POSITION SEL-2
- 603: ID CODE PRESET
- 604: ID CODE SW
- 605: TCG REGEN MODE
- 606: TC OUTPUT SIGNAL IN REGEN MODE
- 607: U-BIT BINARY GROUP FLAG
- 608: PHASE CORRECTION
- 609: TCG CF FLAG
- 610: REGEN CONTROL MODE

**ITEM-700 series: Video control parameter**

- 701: SELECTION OF VIDEO DELAY/SYNC DELAY
- 703: BLANK LINE SELECT
- 704: DECODE Y/C SEP MODE
- 705: EDGE SUBCARRIER REDUCER MODE
- 706: VERTICAL BLANKING V SHIFT
- 707: FORCED VERTICAL INTERPOLATION OFF
- 708: CHROMA PHASE ROTATION MODE
- 709: CAV LEVEL FORMAT  
(DNW-A100/A50/A45 only)
- 710: INTERNAL SIGNAL GENERATOR
- 712: VIDEO PROCESS ON CAP LOCK 2FIELD
- 713: VIDEO SETUP REFERENCE LEVEL  
(DNW-A100/A50/A45 only)
- 714: VIDEO ADJUST RANGE
- 715: VIDEO GAIN
- 716: CHROMA GAIN
- 717: CHROMA PHASE CONTROL

- 718: SETUP LEVEL
- 719: SYSTEM PHASE SYNC
- 720: SYSTEM PHASE SC
- 721: Y/C DELAY
- 722: REMOTE VIDEO CONTROL MODE
- 723: INPUT VIDEO BLANK
- 726: H BLANKING WIDTH
- 727: VIDEO EDIT PREVIEW SWITCHER

**ITEM-800 series: Audio control parameter**

- 802: DIGITAL AUDIO MUTE IN SHUTTLE MODE
- 805: AUDIO MONITOR OUTPUT MIXING
- 806: METER SCALE
- 807: AUDIO OUTPUT PHASE
- 808: INTERNAL AUDIO SIGNAL GENERATOR
- 809: AUDIO LEVEL METER DIMMER CONTROL
- 810: AUDIO EDIT PREVIEW SWITCHER
- 813: AUDIO CH3 INPUT SELECT
- 814: AUDIO CH4 INPUT SELECT

**ITEM-900 series: Digital process parameter**

- 911: NO COMPRESSION LINE

**ITEM-F00 series: Adjustment use only**

- F01: AUTO NR IN SP MODE
- F02: EMERGENCY TAPE PROTECTION
- F13: TRACKING CONTROL VIA SEARCH DIAL
- F15: ANALOG TAPE LTC INSERT
- F16: DEVICE TYPE MODIFY

## 1-13. Reference System

For each reference signal in this unit, an external reference video signal (\*1) or input video signal (\*2) is automatically selected by the setting of the OUT REF switch on the sub control panel, the setting of setup menu ITEM-309, and the operation mode (PB/EDIT/REC) of this unit. (Refer to the table below.)

For the reference signal (clock) of an analog video signal in an A/D converter, however, the analog video signal itself is used as a reference signal at all times.

Menu ITEM-309	EXT	AUTO				
OUT REF switch	_____	REF				INPUT VIDEO
Operation mode	_____	PB	EDIT (INT)	EDIT (LINE)	REC	_____
Video input A/D	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px;">External Reference Video (*1)</div> <div style="border: 1px solid black; padding: 5px;">Input Video (*2)</div> </div>					
Video output process						
Digital audio						
Servo system						
Disk system						

\*1: REF. VIDEO input

\*2: The input video signal is selected by the VIDEO INPUT SELECT button on the upper control panel.

### Note

- EDIT (INT) ; Internal Edit  
Edit of tape to hard disk
- EDIT (LINE) ; Line Edit  
This edit operation is performed for an SX format tape or hard disk only.

## Independent Recording of Audio Signal

Even if an input video signal is selected as the reference signal, the reference signal is automatically selected to an external reference video signal for the period in which the no input video signal is input. The reference signal generated in the inside of this unit is automatically selected for the period in which no external reference video signal is input.

An audio signal can be independently recorded by this system even if no reference video signal is input from the outside.

## Alarm Display for Video Input Signal and Reference Signal

### 1. Blinking of the VIDEO INPUT SELECT button

The selected button blinks when signal is not entered in the input connector selected by this button.

### 2. Blinking of the STOP button

The button blinks when the reference signal is not locked to an input video signal.

(This function can be inhibited in setup menu ITEM-105.)

- When the OUT REF switch is set to “INPUT VIDEO”  
The VIDEO INPUT SELECT button blinks when the signal is not entered in the input connector selected by this button.
- When the OUT REF switch is set to “REF”  
The STOP button blinks in either of the following cases.  
When no reference signal is input to REF VIDEO INPUT connector.  
When the reference video signal (REF.VIDEO input) is not synchronized with an input video signal selected by VIDEO INPUT SELECT button.

## 1-14. 525/625 Switchable Function

Set the ITEM-013 to ON and change the mode following message which is superimposed on the video monitor.

(It is necessary that the CHARACTER switch of the sub control panel is set to ON so that the message is superimposed on the video monitor.)

### Note

It is required to power off and on again to change the mode after setting. (Turn off the power following message which is superimposed on the video monitor.)

### Importance

If the mode is changed, the signal that had recorded on the HDD is erased.

### In the NTSC model (DNW-A100/A50/A45)

After the setting is complete, the unit operates in 625/50 mode. Therefore, the signal of 625/50 system (except the analog composite video input) can be recorded on the tape by Betacam SX format, and the tape recorded based on the Betacam SX format of 625/50 system can also be played back. The signal of 625/50 system is output from all output connectors.

### Notes

- Betacam/Betacam SP format of 625/50 system cannot be played back in this unit.
- Analog composite video signal of 625/50 system cannot be recorded in this unit.
- External reference video signal of 625/50 system can be locked by the sync signal only, but cannot be locked by color framing in this unit.

### In the PAL model (DNW-A100P/A50P/A45P)

After the setting is complete, the unit operates in 525/60 mode. Therefore, the signal of 525/60 system (except the analog composite video input) can be recorded on the tape by Betacam SX format, and the tape recorded based on the Betacam SX format of 525/60 system can also be played back. The signal of 525/60 system is output from all output connectors.

### Notes

- Betacam/Betacam SP format of 525/60 system cannot be played back in this unit.
- Analog composite video signal of 525/60 system cannot be recorded in this unit.
- External reference video signal of 525/60 system can be locked by the sync signal only, but cannot be locked by color framing in this unit.

## 1-15. Settings and Adjustment when Peripheral Equipment is Connected

Refer to “1-15-4” for setting when connecting the extended hard disk.

### 1-15-1. Time Code Setting

#### When Editing with a Connected Editor (BVE-2000 etc.) Capable of the 1st Edit

TC GENERATOR switches on upper control panel

INT / EXT                   ⇒ INT  
 RESET / REGEN           ⇒ PRESET  
 FREE RUN / REC RUN   ⇒ FREE RUN

#### The standard constant values of a connected editor

The standard constants of each model are shown as follows.

Model name	VTR CONSTANT1								VTR CONSTANT2							
	Data No.								Data No.							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
DNW-A100	B0	41	00	96	07	07	03	8A	0A	07	FB	00	81	3D	FF	4B
DNW-A100P	B1	41	00	96	07	07	03	8A	0A	07	FB	00	81	3D	FF	4B
DNW-A50	B0	45	00	96	07	07	03	8A	0A	07	FB	00	81	3D	FF	4B
DNW-A50P	B1	45	00	96	07	07	03	8A	0A	07	FB	00	81	3D	FF	4B
DNW-A45	B0	45	00	96	07	07	03	8A	0A	07	FB	00	81	3D	FF	4B
DNW-A45P	B1	45	00	96	07	07	03	8A	0A	07	FB	00	81	3D	FF	4B

The values are shown in hexadecimal notation.

#### Note

- Set the data of No.8 of the VTR CONSTANT 1 to “0A” for the following editors.
  - BVE-900 ROM version: less than or equal 1.08
  - BVE-600 ROM version: less than or equal 1.01
- In case of remote-controlling this unit by the editor, set the setup menu ITEM No.401: FUNCTION MODE AFTER CUE-UP to “STOP”.

#### When Editing with Direct Machine-to-Machine

#### Note

The setup menu ITEM-601: REGEN CONTROL MODE setting data must be set to “AS&IN”.

TC GENERATOR switches on upper control panel

INT / EXT                   ⇒ INT  
 RESET / REGEN           ⇒ PRESET  
 FREE RUN / REC RUN   ⇒ REC RUN



## 1-15-2. System Phase Alignment

An external reference video signal and analog composite signal (when BKDW-505/506 is used) must be input to this unit after they are adjusted so that SC-H conforms to the specification.

---

### When Connecting to a Digital Switcher

Fundamentally, the system phase adjustment is not necessary.  
Refer to the manual of digital switcher for details.

---

### When Connecting to a Analog Switcher

Perform the system phase adjustment referring to the manual of the analog switcher.

The system phase of this unit is adjusted by using the SYNC control and SC control of SYSTEM PHASE on the sub control panel.

#### Notes

- Be sure to adjust in PB mode.  
The system phase does not change even if the SYNC/SC control is turned in the REC mode, but it changes when the REC mode is shifted to the PB mode.
- The playback sound may be momentarily interrupted when the SYNC/SC control is turned during tape playback.

## 1-15-3. Setup Menu Setting

---

### Video/Sync Delay Setting “ITEM-701”

Commonly, when integrating the menu into the editing system, set on “VIDEO”.  
To prevent the picture shift during EE/PB switching in the VTR-to-VTR edit operation, this setup menu is set to “VIDEO”.

---

### Analog Component Input/Output Format Setting “ITEM-709”

The input (SUB-ITEM-1) and output (SUB-ITEM-2) sides are set to “D-1” or “B-CAM” according to the operating system, respectively.

#### **1-15-4. Settings when Extended Hard Disk is Connected**

This section will be available as a supplement.

## 1-16. Installation of BKDW-505/506

By installing the analog composite decoder board BKDW-505/506 in the unit, a composite video signal is converted to a digital signal, then decoded to a component digital signal.

For DNW-A100/A50/A45 ----- BKDW-505

For DNW-A100P/A50P/A45P ----- BKDW-506

### Notes

If the BKNW-104 is already installed, the BKDW-505/506 can not be installed in the unit.  
When installing the BKDW-505/506, remove the BKNW-104.

### Component

- Analog composite decoder board (DEC-65 board)

### 1-16-1. Procedure

#### Note

Turn off the power before starting the installation.

Check that there is not anything wrong with COMPOSITE VIDEO out picture of this unit.

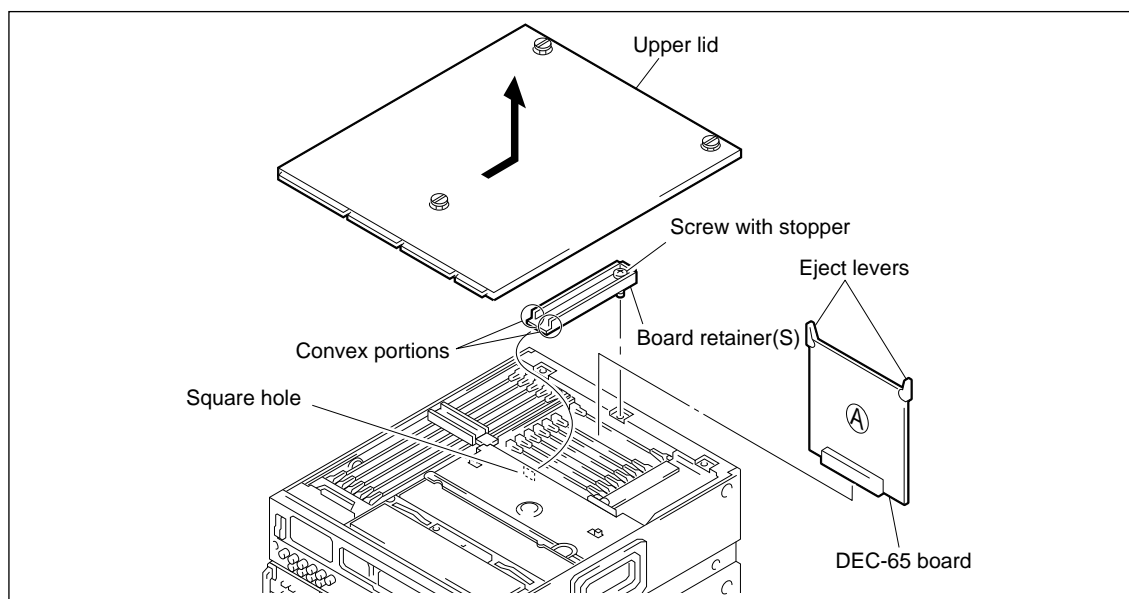
If something is wrong with it, this unit needs repair or adjustment.

- (1) Remove the upper lid (Refer to 2-3-1) .
- (2) Loose one screw fully, remove the board retainer (S).
- (3) If the BKNW-104 is already installed, remove the BKNW-104.  
(Refer to “2-13. Pulling Out /Insertion of Plug-in Board” for the removal.)
- (4) Install the DEC-65 board in the second slot from the rear placing the A-side towards the front.

#### Note

After inserting the DEC-65 board, press the two eject levers from above simultaneously and connect the board to the connector on the mother board securely.

- (5) Insert the convex portions of board retainer (S) in the square hole of chassis. Then fix the board by tightening the screw.
- (6) Perform “1-16-2. Check after Installing”.
- (7) Install the upper lid.



## 1-16-2. Check after Installing

### Equipment

#### BKDW-505 (For DNW-A100/A50/A45)

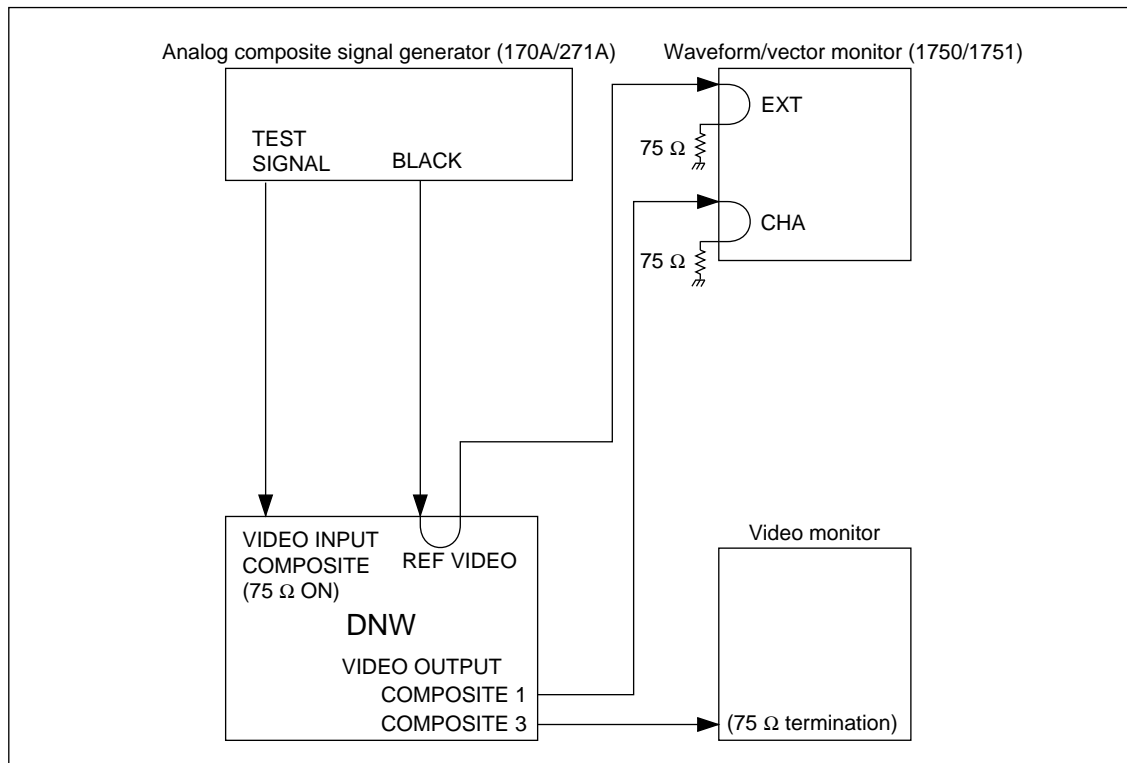
Analog composite signal generator (TEKTRONIX TSG-170A or equivalent)  
 Waveform/vector monitor (TEKTRONIX 1750/1780R or equivalent)  
 Video monitor  
 75  $\Omega$  terminator (2)

#### BKDW-506 (For DNW-A100P/A50P/A45P)

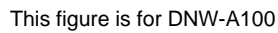
Analog composite signal generator (TEKTRONIX TSG-271A or equivalent)  
 Waveform/vector monitor (TEKTRONIX 1751/1781R or equivalent)  
 Video monitor  
 75  $\Omega$  terminator (2)

### Connection

- (1) Connect the above equipments as shown below.
- (2) Turn the 75 $\Omega$  termination switch of composite video input of the unit to ON.



Turn on the power, and set each control panel as shown below.



BLACK LEVEL for DNW-A100P/A50P/A45P

The front panel of the VCR includes the following controls and connections:

- EMPHASIS:** A rotary switch with positions for ON and OFF. The OFF position is connected to the common terminal of a 2FD 4 (R25/S0) potentiometer.
- CHARACTER:** A switch with positions for OFF and ON.
- DOLBY NR:** A switch with positions for OFF and ON.
- OUT REF:** A switch with positions for INPUT VIDEO and REF. The REF position is connected to the common terminal of a 2FD 4 (R25/S0) potentiometer.
- PROCESS CONTROL:** A switch with positions for REMOTE and LOCAL. The LOCAL position is connected to the common terminal of a 2FD 4 (R25/S0) potentiometer.
- VIDEO PRESET:** A potentiometer with positions for MAI and JAL. The JAL position is connected to the common terminal of a 2FD 4 (R25/S0) potentiometer.
- CHROMA PRESET:** A potentiometer with positions for MAI and JAL. The JAL position is connected to the common terminal of a 2FD 4 (R25/S0) potentiometer.
- SET UP PRESET:** A potentiometer with positions for MAI and JAL. The JAL position is connected to the common terminal of a 2FD 4 (R25/S0) potentiometer.
- Y/C DELAY PRESET:** A potentiometer with positions for MAI and JAL. The JAL position is connected to the common terminal of a 2FD 4 (R25/S0) potentiometer.
- CHROMA PHASE PRESET:** A potentiometer with positions for MAI and JAL. The JAL position is connected to the common terminal of a 2FD 4 (R25/S0) potentiometer.
- SC SYSTEM PHASE:** A potentiometer with positions for MAI and JAL. The JAL position is connected to the common terminal of a 2FD 4 (R25/S0) potentiometer.
- REC INHIBIT:** A switch with positions for ON and OFF. The OFF position is connected to the common terminal of a 2FD 4 (R25/S0) potentiometer.
- KEY INHIBIT:** A switch with positions for ON and OFF. The OFF position is connected to the common terminal of a 2FD 4 (R25/S0) potentiometer.
- CAPSTAN LOCK:** A switch with positions for 2FD and 4 (R25/S0). The 4 (R25/S0) position is connected to the common terminal of a 2FD 4 (R25/S0) potentiometer.

1-33

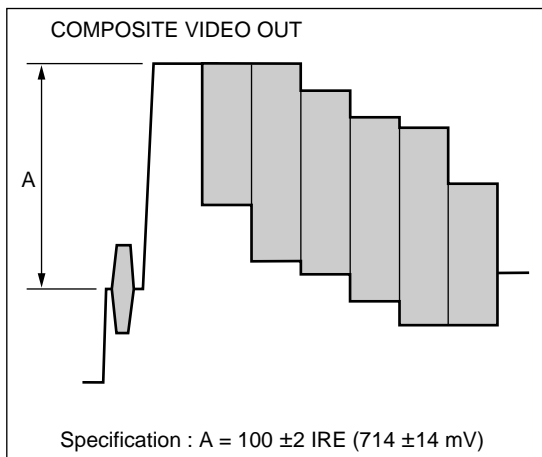
## Check and Adjustment

### Note

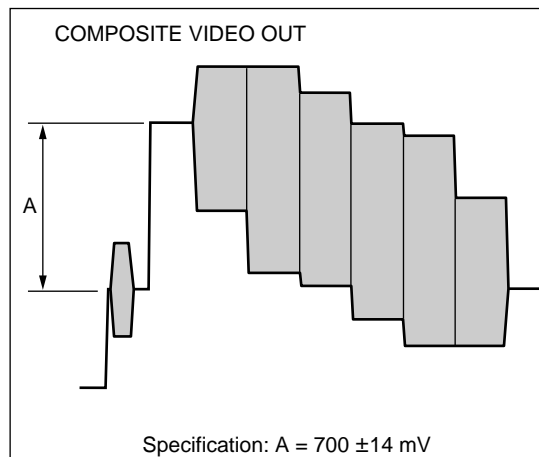
Wait for more than 30 minutes after turning on the power, then perform the check and adjustment.

### 1. Check and Adjustment of Analog Composite Input Level

- (1) Set the output signal of a signal generator to color-bar signal.  
 For BKDW-505: 75% color-bar signal  
 For BKDW-506: 100% color-bar signal
- (2) Check using a waveform monitor that the level between the pedestal and peak white satisfies the specifications. When the specification is satisfied, perform step (10).  
 If the specification is not satisfied, perform steps (3) to (9), then perform step (10).



**BKDW-505 (75% color-bar signal/NTSC)**



**BKDW-506 (100% color-bar signal/PAL)**

- (3) Push the S1101 on the SS-63 board so as to enter the maintenance mode.
- (4) Select “AGC VIDEO GAIN” of A25: DEC VR.  
**Note**  
 Proceed to A25: DEC VR according to the next page.
- (5) Turn the search dial slowly while pressing the JOG button on the lower control panel until the level between the pedestal and peak white satisfies the specifications.  
**Note**  
 The data value displayed on the video monitor screen changes.  
 Turn the search dial while monitoring the change in a level.
- (6) After completing the adjustment, push the MENU button once so as to exit “AGC VIDEO GAIN” of A25: DEC VR.
- (7) Select A2F:NV-RAM CONTROL and save the adjusted data in NV-RAM (execute “SAVE ALL ADJUST DATA”).  
**Note**  
 Proceed to A2F:NV-RAM CONTROL according to the next page.
- (8) Check that “Save Complete” is displayed on the video monitor screen.
- (9) Push the MENU button on the lower control panel several times so as to exit the maintenance mode.
- (10) Perform “2. Frequency Response Check” on page 1-36 .

## How to Enter the Maintenance Mode

- (1) Push the S1101 on the SS-63board.

## How to Enter the Next Menu

- (1) Push the JOG button once, and the button illuminates.  
=Search dial enters into JOG mode.
- (2) Turn the search dial and set the \* mark to a desired menu (mode).
- (3) Push the SET button.

## How to Exit the Current Menu (Mode)

- (1) Push the MENU button.

### Note

If the MENU button is pushed several times, maintenance mode exits.

## How to Change the Data Value (level adjustment)

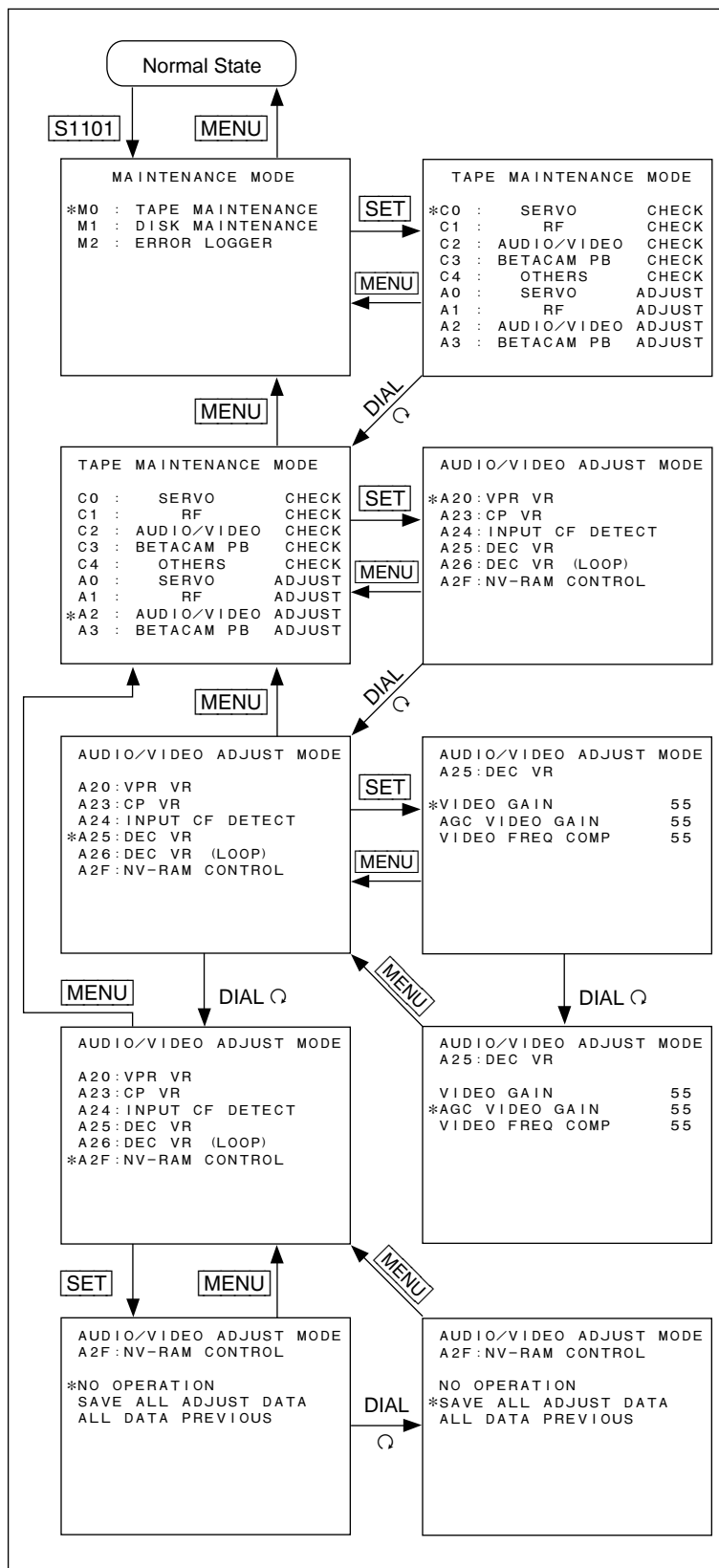
- (1) Turn the search dial and set the \* mark to the item to adjust.
- (2) Turn the search dial while pressing the JOG button.

REVERSE direction : decrease the data value  
(00's next is FF)

FORWARD direction : increase the data value  
(FF's next is 00)

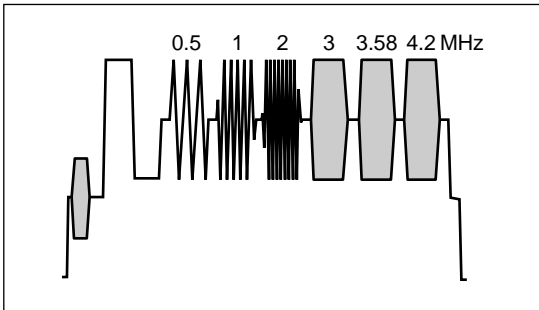
## How to Save the Data

- (1) Turn the search dial and set the \* mark to A2F :  
NV-RAM CONTROL.
- (2) Push the SET button.
- (3) Turn the search dial and set the \* mark to  
“SAVE ALL ADJUST DATA” .
- (4) Push the SET button.

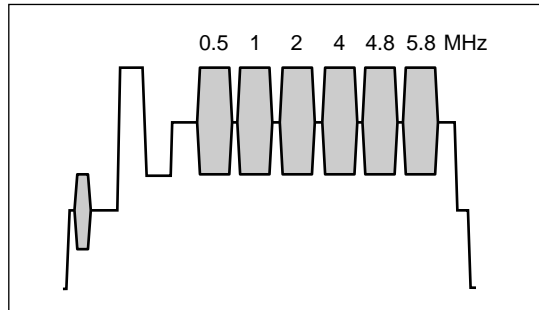


## 2. Frequency Response Check

- (1) Set the output signal of the signal generator to the multi-burst signal.
- (2) Check using the waveform monitor that the level of each frequency component is uniform.  
If the level is not uniform, perform steps (3) to (8).



**BKDW-505 (Multi-burst signal/NTSC)**



**BKDW-506 (Multi-burst signal/PAL)**

- (3) Push S1101 on the SS-63 board so as to enter the maintenance mode.
- (4) Select “VIDEO FREQ COMP” of A25: DEC VR.  
**Note**  
Proceed to A25: DEC VR according to page 1-35.
- (5) Turn the search dial slowly while pressing the JOG button on the lower control panel until the level of each frequency component is uniform.  
**Notes**  
The data value displayed on the video monitor screen changes.  
Turn the search dial while monitoring the change in a level.
- (6) After completing the adjustment, push the MENU button once so as to exit “VIDEO FREQ COMP” of A25: DEC VR.
- (7) Select A2F:NV-RAM CONTROL and save the adjusted data in NV-RAM (execute “SAVE ALL ADJUST DATA”).  
**Notes**  
Proceed to A2F: NV-RAM CONTROL according to page 1-35.  
Check that “Save Complete” is displayed on the video monitor screen.
- (8) Push the MENU button on the lower control panel several times so as to exit the maintenance mode.



## **1-17. Installation of BKNW-103**

This section will be available as a supplement.

## 1-18. Installation of BKNW-104

By installing the analog component input board BKNW-104 in the unit, a analog component signal is converted to a digital signal then recorded.

### Notes

If the BKDW-505/506 is already installed, the BKNW-104 can not be installed in the unit.  
When installing the BKNW-104, remove the BKDW-505/506.

### Component

- Analog component input board (AD-105 board)

### 1-18-1. Procedure

#### Note

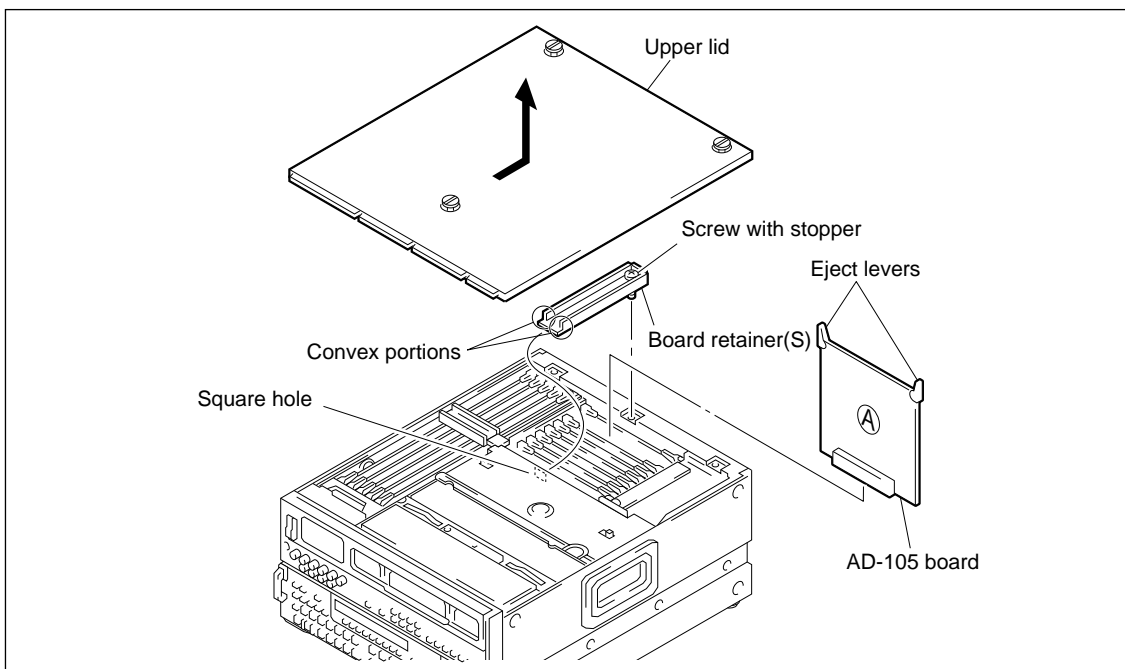
Turn off the power before starting the installation.  
Check that there is not anything wrong with COMPONENT VIDEO out picture of this unit.  
If something is wrong with it, this unit needs repair or adjustment.

- (1) Remove the upper lid. (Refer to 2-3-1.)
- (2) Loose one screw fully, remove the board retainer (S).
- (3) If the BKDW-505/506 is already installed, remove the BKDW-505/506.  
(Refer to “2-13. Pulling Out/Insertion of Plug-in Board” for the removal.)
- (4) Install the AD-105 board in the second slot from the rear placing the A-side towards the front.)

#### Note

After inserting the AD-105 board, press the two eject levers from above simultaneously and connect the board to the connector on the mother board securely.

- (5) Insert the convex portions of board retainer (S) in the square hole of chassis. Then fix the board by tightening the screw.
- (6) Perform “1-18-2. Adjustment after Installing”.
- (7) Install the upper lid.



## 1-18-2. Adjustment after Installing

Perform the adjustment as shown below after installing the AD-105 board.

### Items of adjustment

No.	Item		Adjustment point	Measurement area
1	Component output level check	Y	—	VIDEO OUTPUT COMPONENT Y
		R-Y	—	VIDEO OUTPUT COMPONENT R-Y
		B-Y	—	VIDEO OUTPUT COMPONENT B-Y
2	Component output level adjustment	Y	A20: VPR VR: Y OUTPUT LEVEL	VIDEO OUTPUT COMPONENT Y
		R-Y	A20: VPR VR: R-Y OUTPUT LEVEL	VIDEO OUTPUT COMPONENT R-Y
		B-Y	A20: VPR VR: B-Y OUTPUT LEVEL	VIDEO OUTPUT COMPONENT B-Y
		Data save	A2F: NV-RAM CONTROL	
3	Component output phase check		CHECK	
4	Component input level adjustment	Y	A22: AD VR(LOOP) : Y INPUT LEVEL	VIDEO OUTPUT COMPONENT Y
		R-Y	A22: AD VR(LOOP) : R-Y INPUT LEVEL	VIDEO OUTPUT COMPONENT R-Y
		B-Y	A22: AD VR(LOOP) : B-Y INPUT LEVEL	VIDEO OUTPUT COMPONENT B-Y
		Data save	A2F: NV-RAM CONTROL	
5	Component input phase (Betacam) adjustment	Y	A22: AD VR(LOOP) : Y INPUT PHASE	VIDEO OUTPUT COMPONENT Y
		R-Y	A22: AD VR(LOOP) : Y/R-Y INPUT DELAY	VIDEO OUTPUT COMPONENT Y/R-Y
		B-Y	A22: AD VR(LOOP) : Y/B-Y INPUT DELAY	VIDEO OUTPUT COMPONENT Y/B-Y
		Data save	A2F: NV-RAM CONTROL	
6	Component video input frequency response adjustment	Y	A22: AD VR(LOOP) : Y FREQ COMP	SDI OUTPUT
		R-Y	A22: AD VR(LOOP) : R-Y FREQ COMP	SDI OUTPUT
		B-Y	A22: AD VR(LOOP) : B-Y FREQ COMP	SDI OUTPUT
		Data save	A2F: NV-RAM CONTROL	

#### Note

Perform No.2 only if the specification is not satisfied as to checking of No.1.

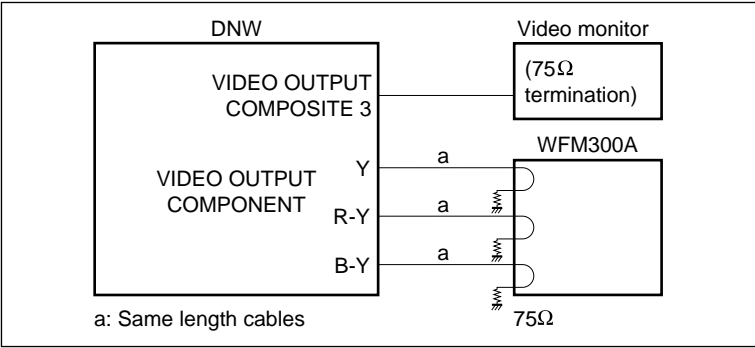
Equipment

- Component waveform monitor (TEKTRONIX WFM300A or equivalent)
- Component waveform monitor (TEKTRONIX WFM601i or equivalent)
- Video monitor
- 75 Ω terminator (3)

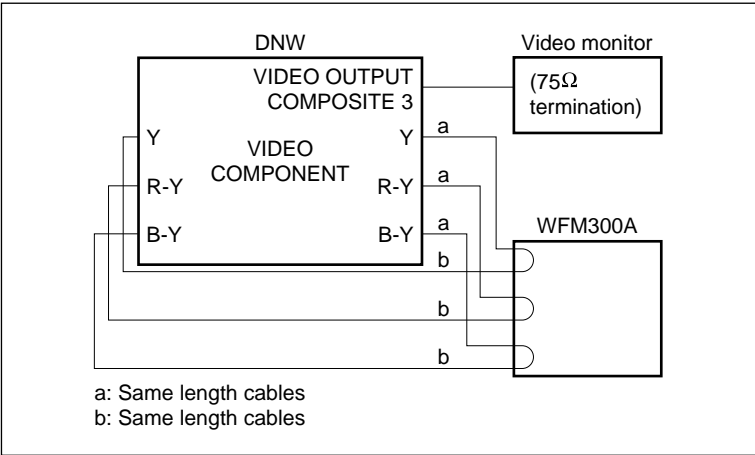
Connection

Connect the equipments described above as shown below depending on the items of adjustment.

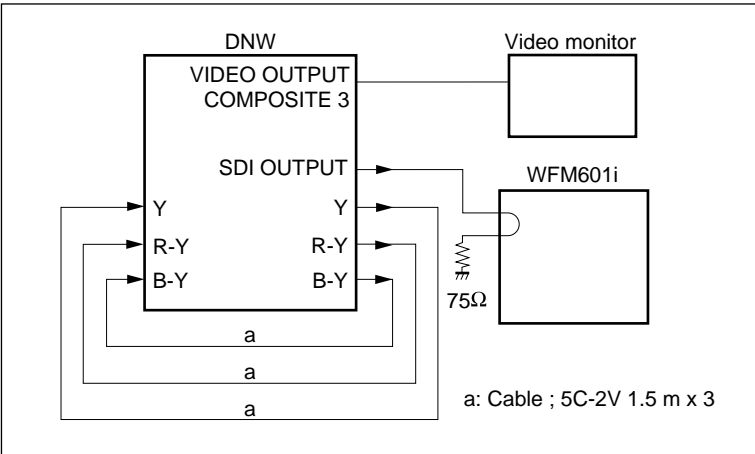
Connection 1



Connection 2

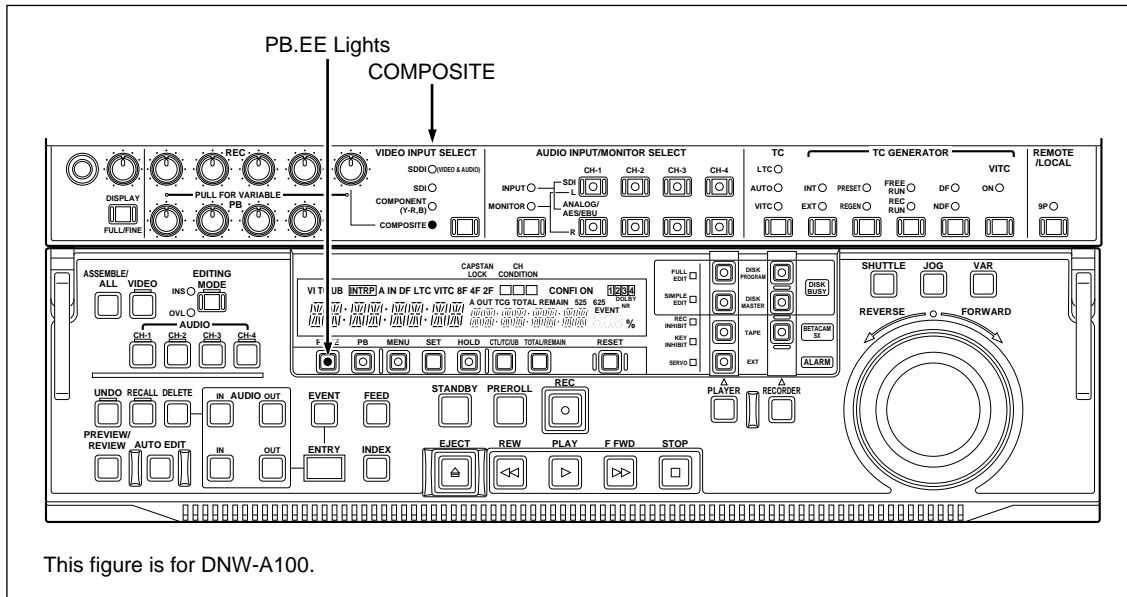


Connection 3

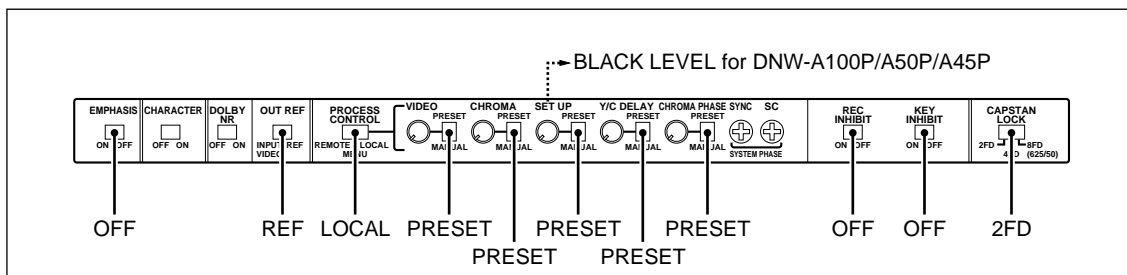


## Setting of Unit Side

Turn on the power, and set each switch on the control panel as shown below.



Upper/Lower Control Panel



## Operational Method of Maintenance Mode

### 1. How to Enter the Maintenance Mode

- (1) Push the S1101 on the SS-63 board.

### 2. How to Enter the Next Menu

- (1) Push the JOG button once, and the button illuminates.  
=Search dial enters into JOG mode.
- (2) Turn the search dial and set the \*mark to a desired menu (mode).
- (3) Push the SET button.

### 3. How to Exit the Current Menu (Mode)

- (1) Push the MENU button.

**Note**

If the MENU button is pushed several times, maintenance mode exits.

### 4. How to Change the Data Value (Level Adjustment)

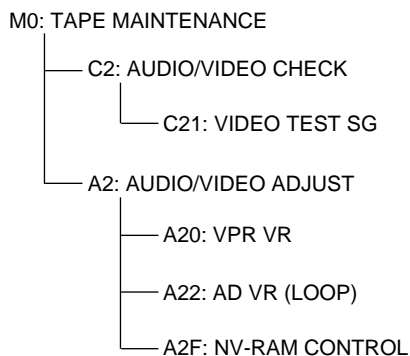
- (1) Turn the search dial and set the \*mark to the item to adjust.
- (2) Turn the search dial while pressing the JOG button.  
REVERSE direction: decrease the data value (00's next is FF)  
FORWARD direction: increase the data value (FF's next is 00)

### 5. How to Save the Data

- (1) Turn the search dial and set the \*mark to A2F: NV-RAM CONTROL.
- (2) Push the SET button.
- (3) Turn the search dial and set the \*mark to "SAVE ALL ADJUST DATA".
- (4) Push the SET button.

**Note**

The sub mode and menu of maintenance mode that is used when installing the AD-105 board is as shown below.



## Check and Adjustment

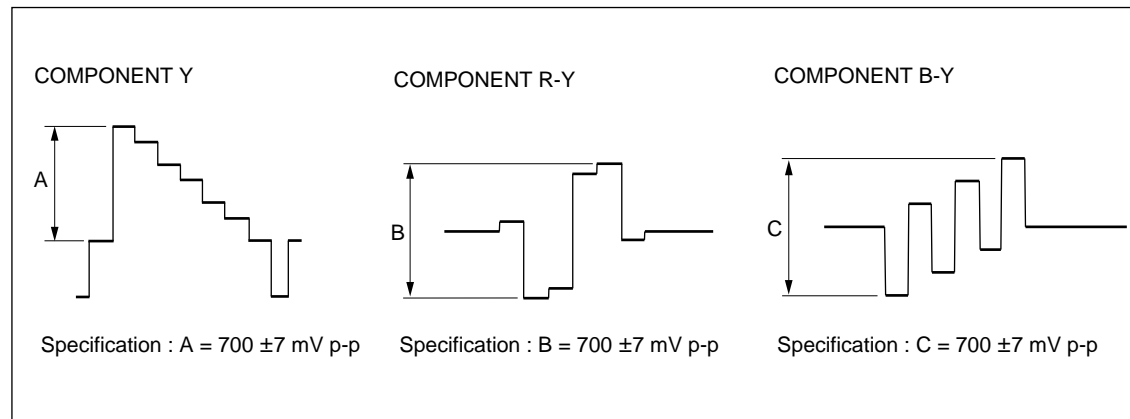
### Note

Wait for more than 30 minutes after turning on the power, then perform the check and adjustment.

### 1. Component Video Output Level Check

Refer to 1-42 page for operation method of the maintenance mode when checking.

- (1) Connect as connection 1.
- (2) Push the S1101 on the SS-63 board so as to enter the maintenance mode.
- (3) Select C21: VIDEO TEST SG of C2: AUDIO/VIDEO CHECK of maintenance mode.
- (4) Set TEST SG output to 100% color-bar signal.
- (5) Check using a waveform monitor that the levels of Y, R-Y and B-Y satisfy the specifications.  
When the specifications are satisfied, perform “3. Component Video Output Phase Check”.  
If the specifications are not satisfied, perform “2. Component Video Output Level Adjustment”.



### 2. Component Video Output Level Adjustment

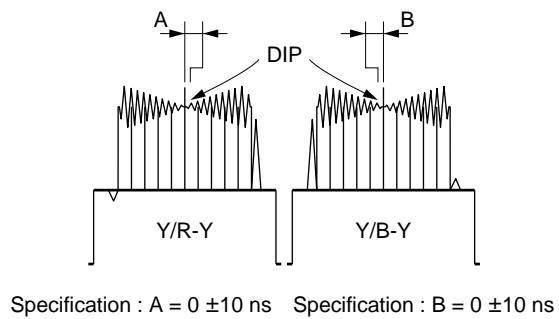
Refer to 1-42 page for operation method of the maintenance mode when adjusting.

- (1) Select A20: VPR VR of A2: AUDIO/VIDEO ADJUST.
- (2) Adjust the level of the component signal that does not satisfy the specifications as “1. Component Video Output Level Check”.  
  - Y      Select “Y OUTPUT LEVEL” and adjust.
  - R-Y    Select “R-Y OUTPUT LEVEL” and adjust.
  - B-Y    Select “B-Y OUTPUT LEVEL” and adjust.
- (3) After completing the adjustments, push the MENU button once so as to exit “A20: VPR VR”.
- (4) Select A2F: NV-RAM CONTROL and save the adjusted data in NV-RAM (execute “SAVE ALL ADJUST DATA”).
- (5) Check that “Save Complete” is displayed on the video monitor screen.
- (6) Push the MENU button two times so as to exit A2: AUDIO/VIDEO ADJUST.

### 3. Component Video Output Phase Check

Refer to 1-42 page for operation method of the maintenance mode when checking.

- (1) Connect as connection 1.
- (2) Select C21: VIDEO TEST SG of C2: AUDIO/VIDEO CHECK of maintenance mode.
- (3) Set TEST SG output to BOWTIE.
- (4) Set the waveform monitor to BOWTIE mode.
- (5) Measure the cross points of Y and R-Y, Y and B-Y (BOWTIE DIP point), then check using a waveform monitor that the deviation between the dip points and the center marker satisfy the specifications.
- (6) Push the MENU button two times so as to exit C2: AUDIO/VIDEO CHECK.

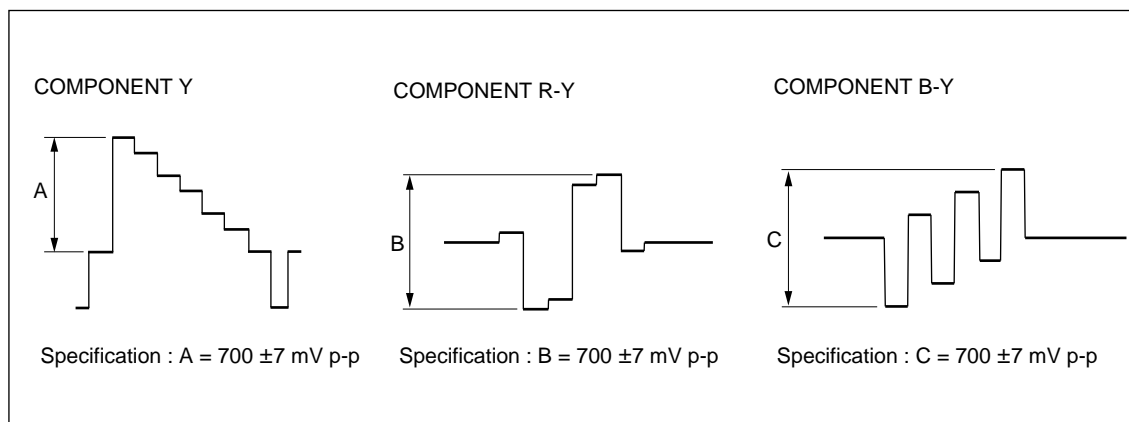




#### 4. Component Video Input Level Adjustment

Refer to 1-42 page for operation method of the maintenance mode when adjusting.

- (1) Connect as connection 2.
- (2) Select A22: AD VR (LOOP) of A2: AUDIO/VIDEO ADJUST of maintenance mode.
- (3) Select "Y INPUT LEVEL".
- (4) Adjust "Y INPUT LEVEL" that the level of Y satisfies the specification.
- (5) Select "R-Y INPUT LEVEL".
- (6) Adjust "R-Y INPUT LEVEL" that the level of R-Y satisfies the specification.
- (7) Select "B-Y INPUT LEVEL".
- (8) Adjust "B-Y INPUT LEVEL" that the level of B-Y satisfies the specification.

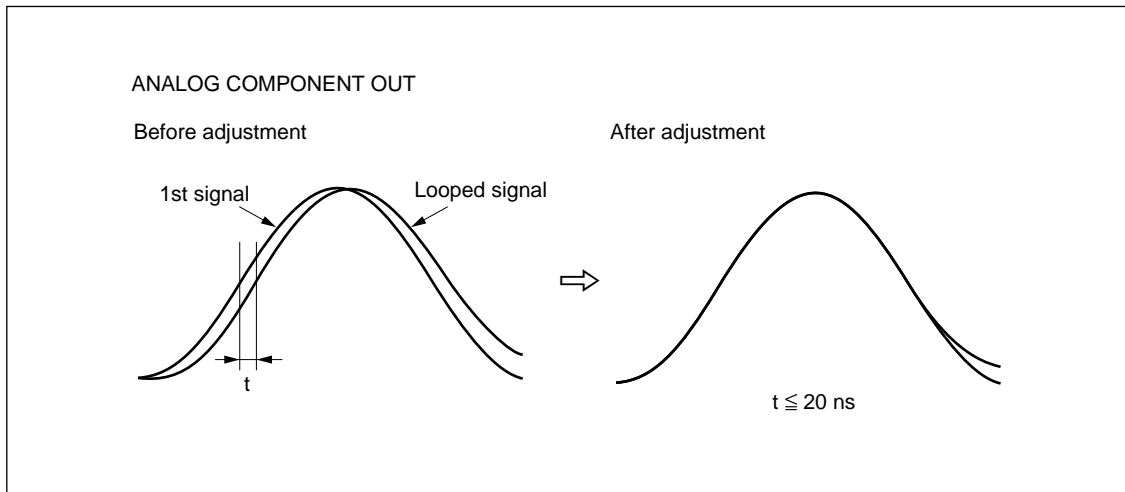


- (9) After completing the adjustments, push the MENU button once so as to exit A22: AD VR (LOOP).
- (10) Select A2F: NV-RAM CONTROL and save the adjusted data in NV-RAM (execute "SAVE ALL ADJUST DATA").
- (11) Check that "Save Complete" is displayed on the video monitor screen.
- (12) Push the MENU button once so as to exit A2F: NV-RAM CONTROL.

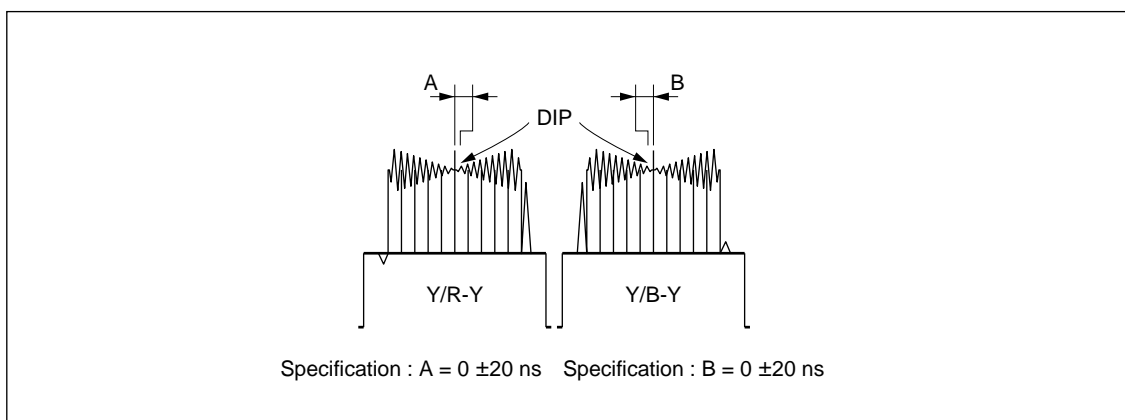
## 5. Component Video Input Phase (Betacam) Adjustment

Refer to 1-42 page for operation method of the maintenance mode when adjusting.

- (1) Connect as connection 2.
- (2) Select "Y INPUT PHASE" of A22: AD VR (LOOP) of maintenance mode.
- (3) Magnify the horizontal axis on the screen of the waveform monitor, then display 2T pulse.
- (4) Adjust that 1st signal and signal after looping overlap.



- (5) Set the waveform monitor to BOWTIE mode.
- (6) Select "Y/R-Y INPUT DELAY".
- (7) Measure the cross point of Y and R-Y (BOWTIE DIP point), then adjust "Y/R-Y INPUT DELAY" that the deviation between the dip point and the center marker satisfies the specifications.
- (8) Select "Y/B-Y INPUT DELAY".
- (9) Measure the cross point of Y and B-Y (BOWTIE DIP point), then adjust "Y/B-Y INPUT DELAY" that the deviation between the dip point and the center marker satisfies the specifications.

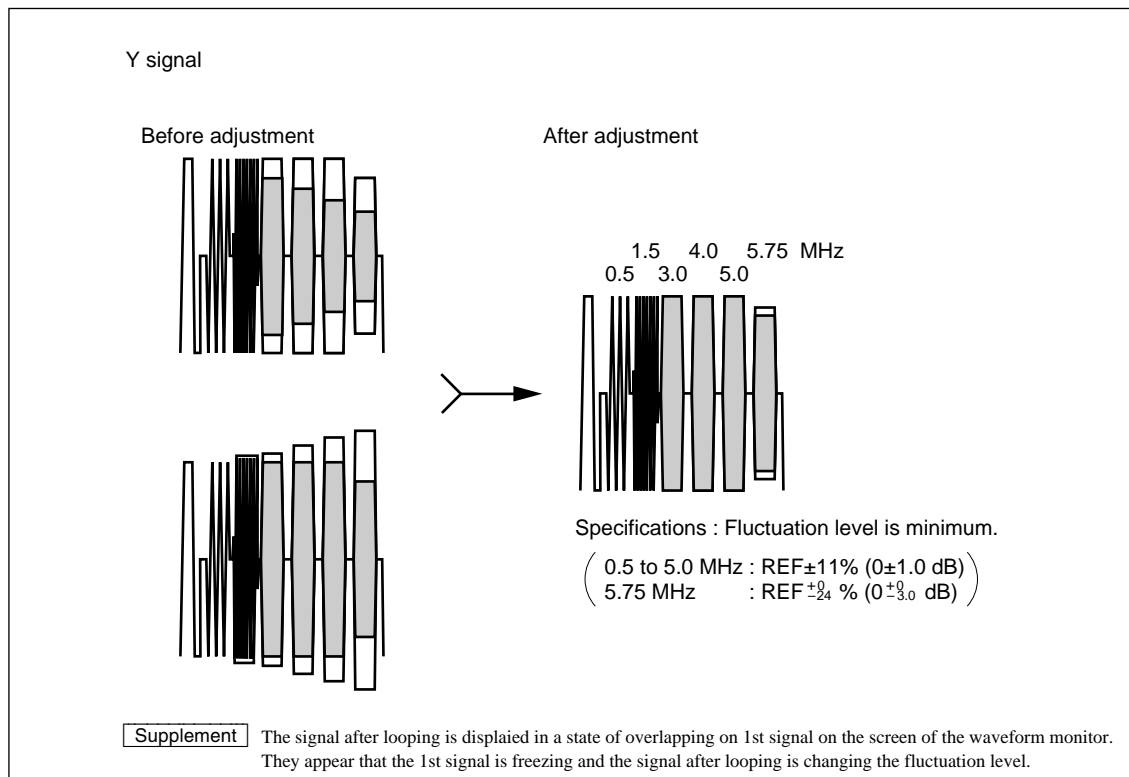


- (10) After completing the adjustment, push the MENU button once so as to exit A22: AD VR (LOOP).
- (11) Select A2F: NV-RAM CONTROL and save the adjusted data in NV-RAM (execute "SAVE ALL ADJUST DATA").
- (12) Check that "Save Complete" is displayed on the video monitor screen.
- (13) Push the MENU button once so as to exit A2F: NV-RAM CONTROL.

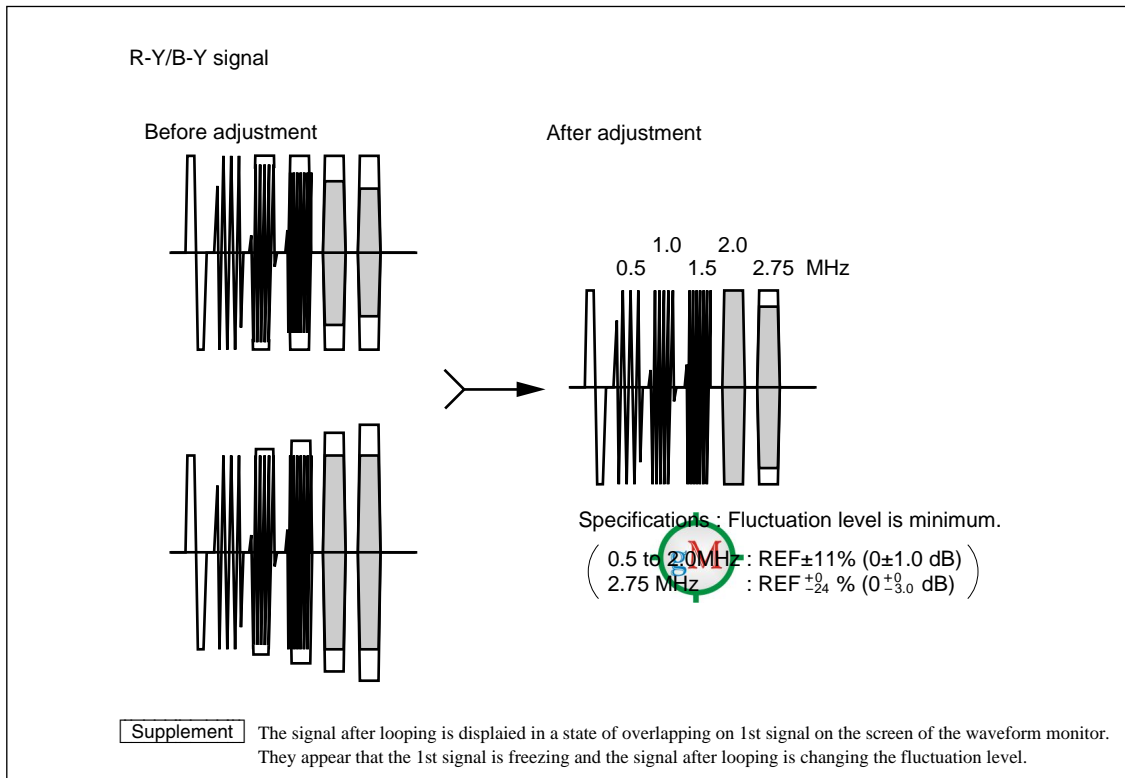
## 6. Component Video Input Frequency Response Adjustment

Refer to 1-42 page for operation method of the maintenance mode when adjusting.

- (1) Connect as connection 3.
- (2) Select “Y FREQ COMP” of A22: AD VR (LOOP) of maintenance mode.
- (3) Adjust “Y FREQ COMP” that the fluctuation level is minimum.
- (4) Regard 1st signal of each frequency as 100 % (REF), then check that the level of signal after looping satisfies the specifications.



- (5) Select "R-Y FREQ COMP".
- (6) Adjust "R-Y FREQ COMP" that the fluctuation level is minimum.
- (7) Regard 1st signal of each frequency as 100 % (REF), then check that the level of signal after looping satisfies the specifications.
- (8) Select "B-Y FREQ COMP".
- (9) Adjust "B-Y FREQ COMP" that the fluctuation level is minimum.
- (10) Regard 1st signal of each frequency as 100 % (REF), then check that the level of signal after looping satisfies the specifications.



- (11) After completing the adjustment, push the MENU button once so as to exit A22: AD VR (LOOP).
- (12) Select A2F: NV-RAM CONTROL and save the adjusted data in NV-RAM (execute "SAVE ALL ADJUST DATA").
- (13) Check that "Save Complete" is displayed on the video monitor screen.
- (14) Push the MENU button several times so as to exit the maintenance mode.

## **1-19. Installation of BKNW-105**

This section will be available as a supplement.



## Section 2

### Service Overview

#### 2-1. Notes on Power Supply Block

##### 2-1-1. Warning on Primary Circuit Block and Electric Shock

The primary circuit consists of the AC-169 board with AC inlet, the circuit breaker, the POWER switch, and the power supply unit.

Be careful not to receive an electric shock when performing the maintenance and service works with the power turned on.

A primary voltage remains applied to the AC-169 board, circuit breaker, and POWER switch even if the POWER switch is turned off. For the work that requires no current conduction, therefore, turn off the POWER switch and disconnect the power cord.

##### 2-1-2. Note on Resetting the Circuit Breaker

The circuit breaker of a primary circuit is mounted on the power panel of this unit. When an overcurrent flows in the primary circuit, the breaker operates and the button protrudes.

If the breaker operates, eliminate the cause for which an overcurrent flows, then push the button.

#### 2-2. Cleaning when the Heads are Clogged

Clean using a cleaning cassette tape (specified product: BCT-5CLN) when the rotary heads are clogged. For the cleaning, refer to “5-2-1. Cleaning by Cleaning Tape”.

##### **WARNING**

Clean the rotary heads in the prescribed procedure using a specified cleaning cassette tape. If not, the rotary heads may be a brasive or damaged.

If the head clogging is not solved using a cleaning cassette tape, use cleaning cloth.

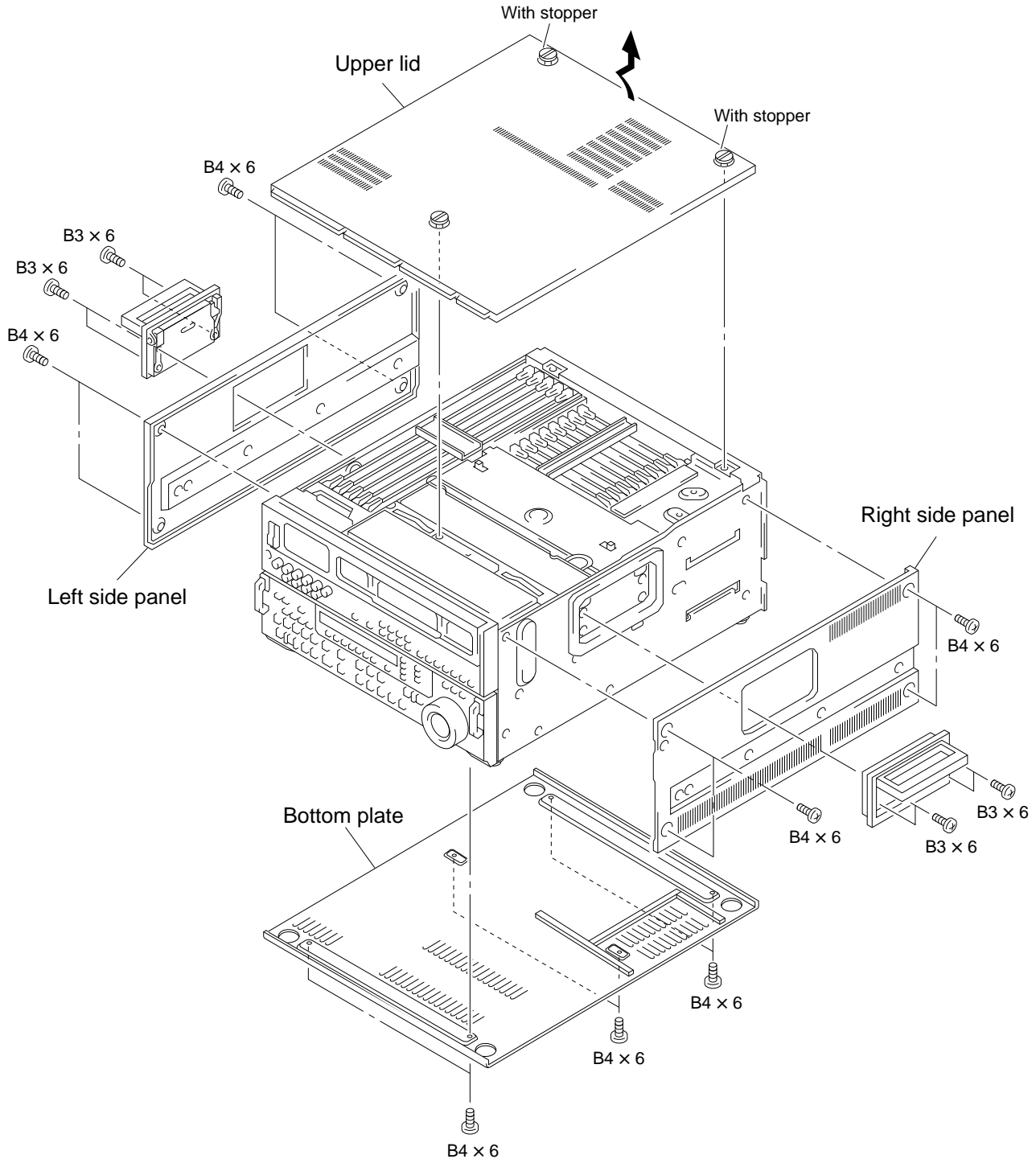
For the cleaning using a cleaning cloth, clean according to the procedure of “5-2-3. Tape Running Surface of Upper Drum and Video Heads Cleaning” after confirming the cautions and preparation in “5-2-2. General Information for Cleaning by Cleaning Cloth.

## 2-3. Removal/Installation of Cabinet

### 2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation

**Note**

Turn off the power and unplug the power cord before starting the removal/installation.





### Upper Lid

1. Loosen three fixing screws.
2. Remove the upper lid by moving in the direction indicated by the arrow.

For installation, perform in the reverse procedures of removal.

**Side Panels** (The right and left side panels are the same in procedure.)

1. Remove four screws (B3 × 6), and remove the handle.
2. Remove four screws (B4 × 6), and remove the side panel.

For installation, perform in the reverse procedures of removal.

### Bottom Plate

#### Note

- With the handle attached, place the unit on its right side panel down for removal and installation. Lend your hand so that the lower handle does not hang down.
- Be careful not to shock the hard disk drive when laying the unit.

1. Remove six screws (B4 × 6), and remove the bottom plate.

For installation, perform in the reverse procedures of removal.

## 2-3-2. Control Panels Removal/Installation

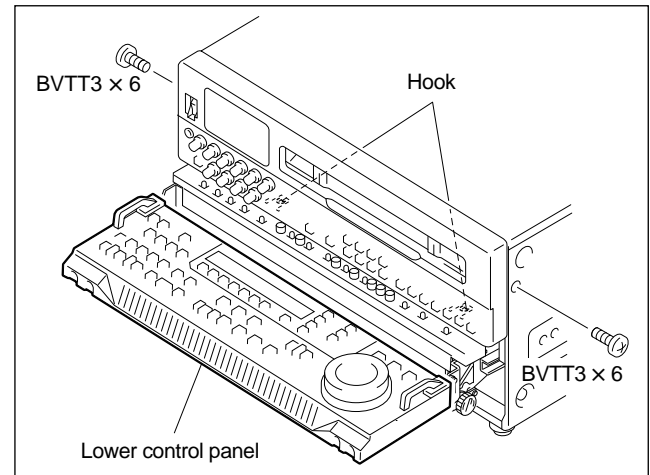
#### Note

Turn off the power and unplug the power cord before starting the removal/installation.

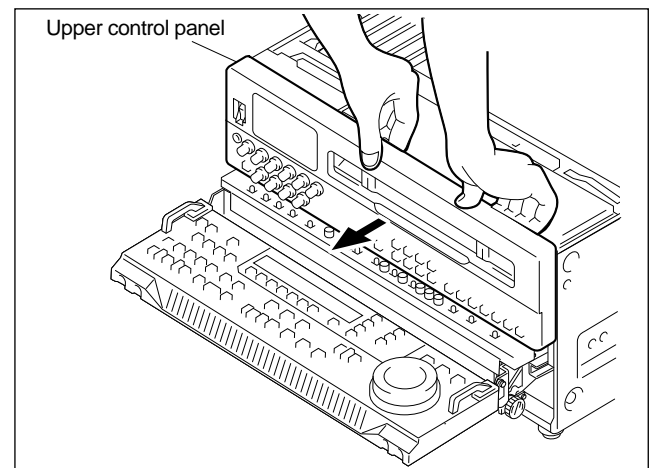
### Upper Control Panel

1. Removal the upper lid.  
(Refer to “2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation”.)
2. Remove the each one screw on the left and right side.
3. Take both side handles on a lower control panel and pull them slightly forward, then pull them more strongly.  
Then the lower control panel tilts upward (to 90 degrees position).

4. Unhook two hooks at lower portion on the upper control panel.



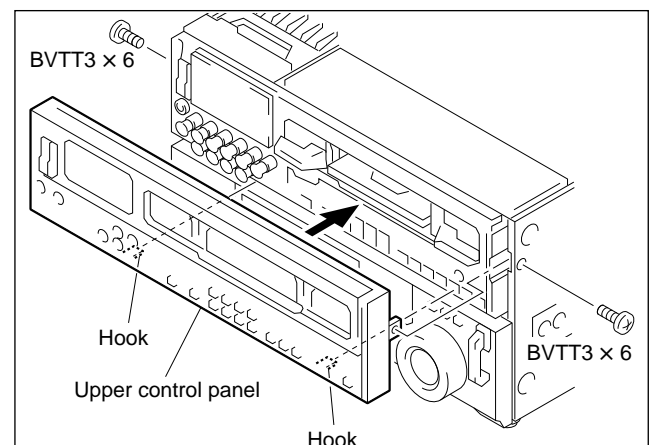
5. Unhook the lugs at the upper control panel from the chassis, and remove in the direction of the arrow.



For installation, perform in the reverse procedures of removal.

#### Note

Insert the hooks at the back of the panel into the convex portions of the chassis, then install the panel in the chassis. (Refer to the figure below.)



**Note**

Turn off the power and unplug the power cord before starting the removal/installation.

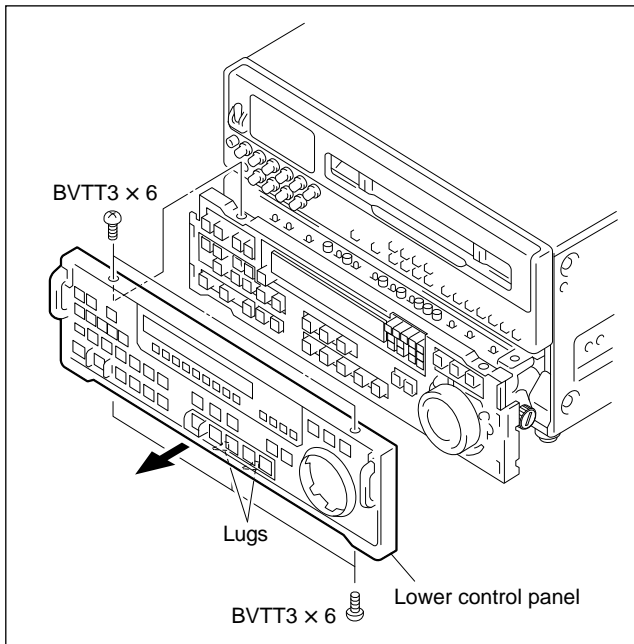
**Lower Control Panel**

1. Take both side handles of a lower control panel and pull them slightly forward, then pull them more strongly.
2. Remove five screws on the top and bottom of the lower control panel, then remove the panel.

**Note**

Open the lower control panel in this case. The screws at the bottom can be removed easily.

3. Remove two lugs at the back of the lower control panel.
4. Remove the lower control panel in the direction of the arrow.



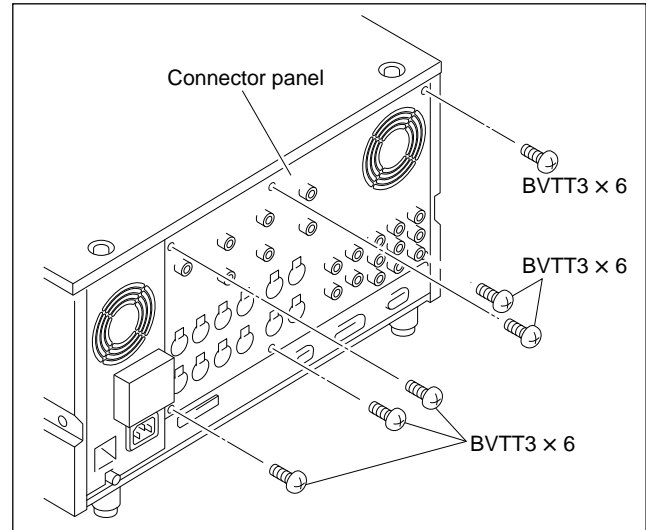
For installation, perform in the reverse procedures of removal.

**2-3-3. Connector Panel Assembly Removal/Installation**

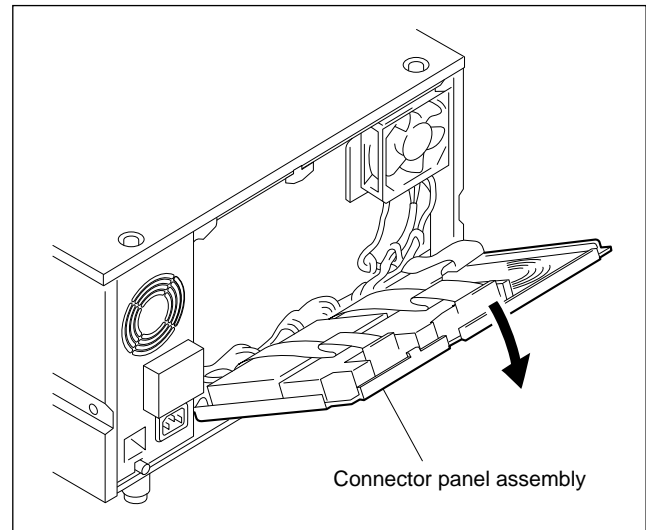
**CAUTION**

For your safety, turn off the power and unplug the power cord before starting the removal/installation.

1. Remove six screws indicated ⇒ on the connector panel.



2. Remove the connector panel so as not to stretch the harnesses as shown in the figure.



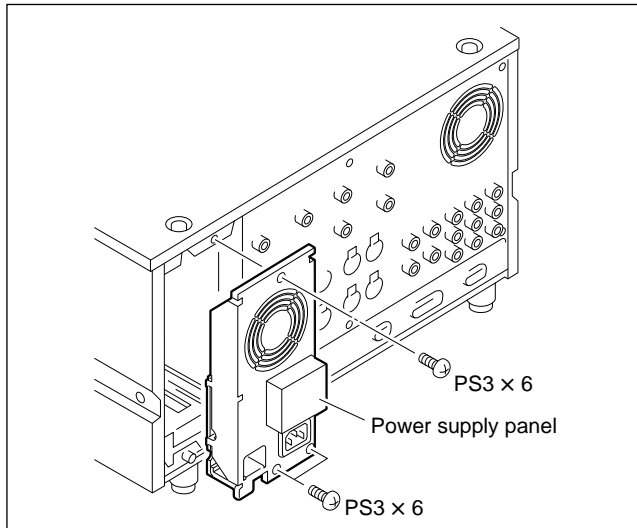
For installation, perform in the reverse procedures of removal.

## 2-3-4. Power Supply Panel Assembly Removal/Installation

### CAUTION

For your safety, turn off the power and unplug the power cord before starting the removal/installation.

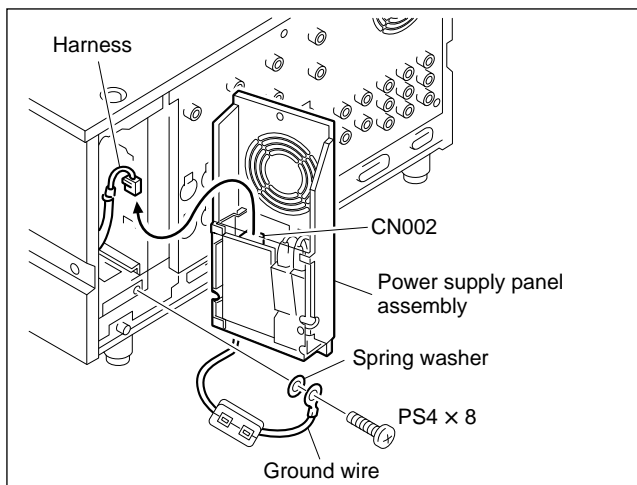
1. Remove three screws, then pull out the power supply panel assembly.



2. Disconnect the harness from the connector CN002 on AC-169 board.
3. Remove one screw fixing the ground wire to the chassis and remove the power supply panel assembly.

### Note

Be sure to remove the spring washer.



For installation, perform in the reverse procedures of removal.

### CAUTION

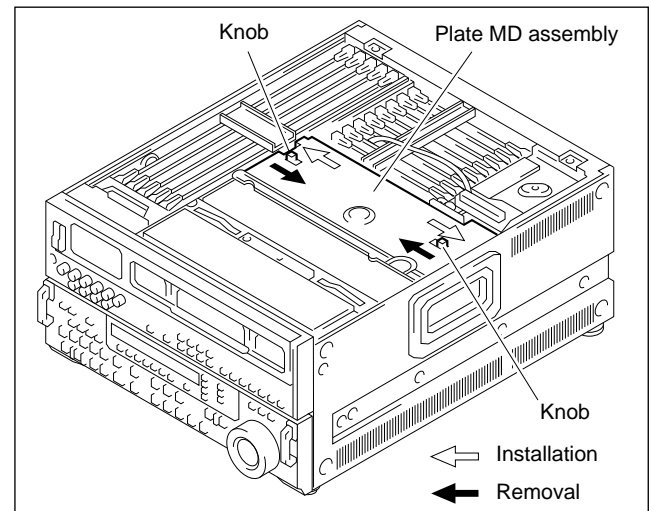
To fix the ground wire, put the spring washer between the terminal of ground wire and chassis.

## 2-4. Plate MD Assembly Removal/Installation

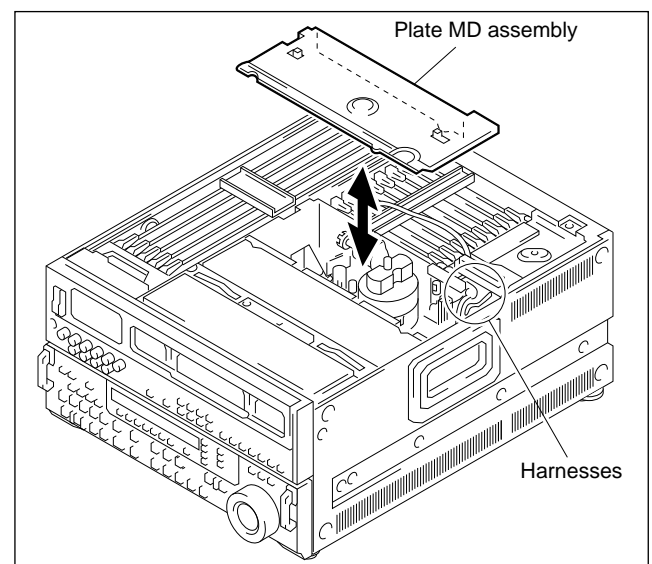
### Note

Turn off the power and unplug the power cord before starting the removal/installation.

1. Removal the upper lid.  
(Refer to “2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation”.)
2. Slide the knobs on the plate MD assembly each in the inside.  
(Move the knobs to the outside. The plate MD assembly is then fixed.)



3. Remove the plate MD assembly.



For installation, perform in the reverse procedures of removal.

### Note

Be careful not to pinch the harnesses under the plate MD assembly in the installation.

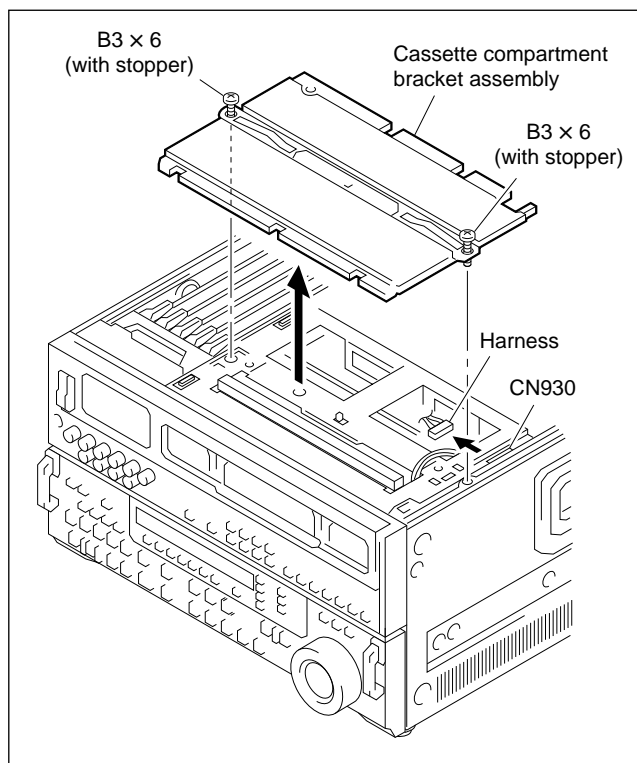
## 2-5. Cassette Compartment Removal/Installation

### Notes

- Turn off the power and unplug the power cord before starting the removal/installation.
- The cassette compartment cannot be removed with the cassette tape inserted. Press the EJECT button with the power turned on and eject the cassette tape.  
If the cassette compartment does not move due to an electric trouble, take out the cassette tape manually. (Refer to “2-12. How to Take Out the Cassette when the Tape is Slacking”.)

### Removal

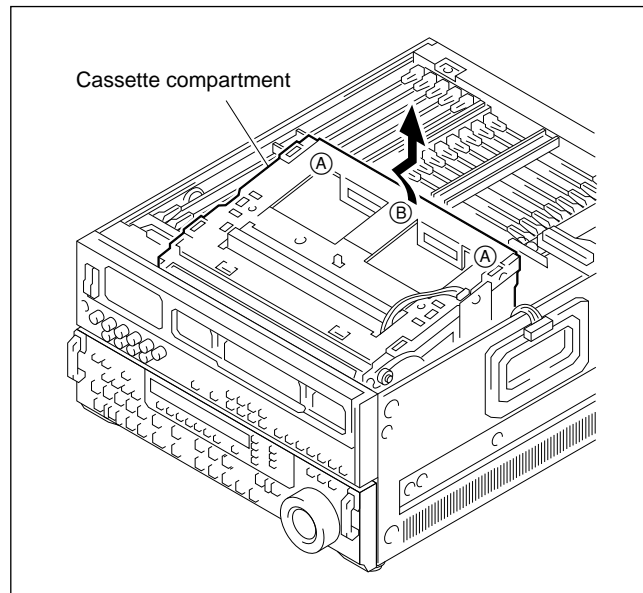
1. Removal the upper lid.  
(Refer to section 2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation.)
2. Removal the plate MD assembly.  
(Refer to section 2-4. Plate MD Assembly Removal/Installation)
3. Loosen two screws, then remove the cassette compartment bracket assembly.
4. Disconnect the harness from the connector CN930 on CL-29 board, and set the harness so it does not put between chassis.



5. Hold the (A) sections (in two positions) and pull up the cassette compartment slightly (by 1 cm).  
When the four cassette compartment positioning legs come off from the four positioning holes on a mechanical deck, shift the cassette compartment backward (by 1 cm) to the position where the cassette door can be completely seen when viewed from just above.
6. Hold the (B) section, raise the cassette compartment slowly upward, and remove it.

### Notes

- Raise it slowly while sliding the cassette compartment slightly back and forth so that the gear on the right of the cassette compartment does not touch the chassis.
- Never move the cassette compartment to the right and left. If unnecessary force is applied to the right and left, the gear or parts may come off.
- Place the cassette compartment with the cassette door up or with cassette compartment positioning legs down.  
(If it is put with the cassette lid at the bottom, the flexible card wire might be damaged.)

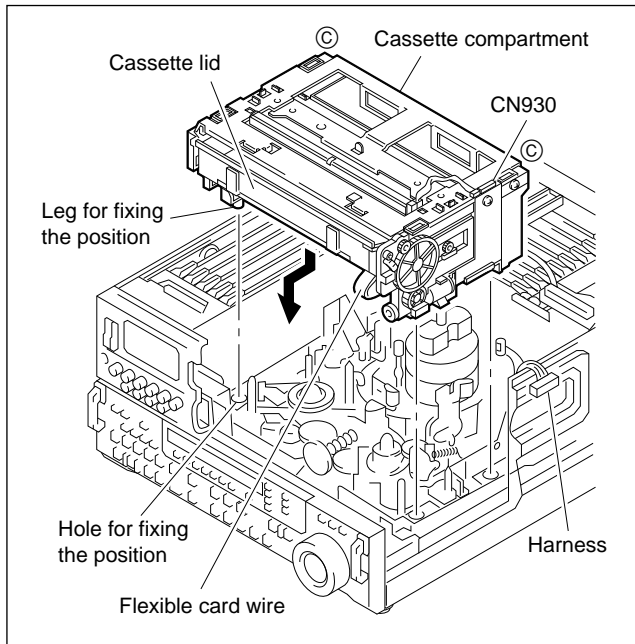


## Installation

7. Install the cassette compartment while inserting slantingly in the direction as shown in the figure.

### Notes

- Insert it slowly while sliding the cassette compartment slightly back and forth so that the gear on the right of the cassette compartment does not touch the chassis.
  - Never move the cassette compartment to the right and left. If unnecessary force is applied to the right and left, the gear or parts may come off.
8. Insert the four legs of the cassette compartment for fixing the position into the four holes on the mechanical deck for fixing the position by pressing the © positions (two positions) as shown in the figure.



9. Connect the harness to the connector CN930.
10. Install the cassette compartment bracket assembly.
11. Install the plate MD assembly and the upper lid.

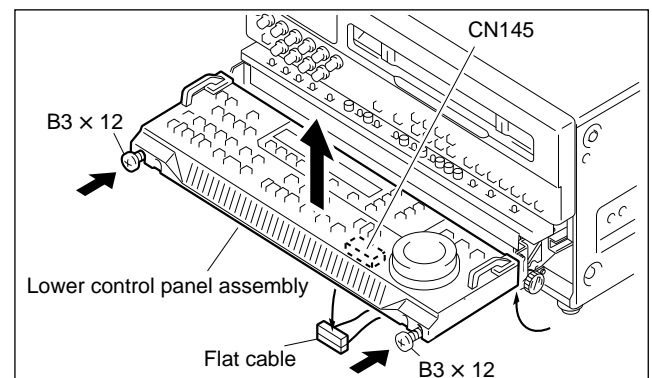
## 2-6. Lower Control Panel Assembly Removal/Installation

### Note

Turn off the power and unplug the power cord before starting the removal/installation.

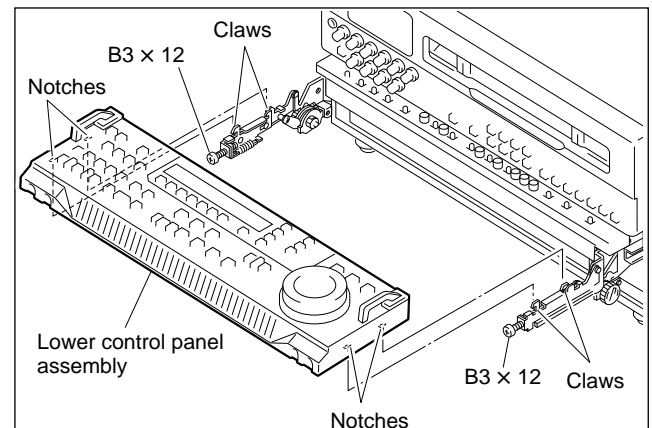
### Removal

1. Take both side handles on a lower control panel and pull them slightly forward, then pull them more strongly. Then the lower control panel tilts upward (to 90 degrees position).
2. Disconnect the flat cable from the connector CN145 on the back of the lower control panel.
3. Loosen two screws in bottom corners of the lower control panel assembly. (Loosen the screws until screw's top are exposed from the lack of the panel assembly.)
4. Raise the lower control panel assembly and remove with the loosened screws pushed in the direction indicated by the arrow.



### Installation

5. Set the notches of the panel assembly to the claws of the arms and insert the panel assembly until making a click sound.
6. Fix the lower control panel assembly with two screws.



7. Connect the flat cable to the connector CN145.
8. Return the lower control panel to 0 degree, then store.

## 2-7. Circuit Function

System configuration	No.	Generic name	Circuit function
Digital process	1	SSX-1	SDDI-SCSI transfer
	2	* DPR-71	Digital data processor (Audio/Video Encoder, Outer error correction)
	3	DPR-73	Digital data processor (Audio/Video processor)
	4	DIF-42	4:2:2 component serial digital interface with Embedded audio
Video process	5	* VPR-17	Video signal processor (A-D, D-A, Reference clock generator, Composite encoder)
	6	* DEC-65	Analog composite decoder (optional board BKDW-505/506)
	7	AD-105	Analog component video input (optional board BKNW-104)
Analog BETACAM video PB process	8	* DM-89	RF demodulator for Analog Betacam PB
	9	* TBC-24	TBC (A-D, Write clock generator)
	10	* TBC-23	TBC (Sequence and Reference)
Audio process	11	* APR-12	Audio A-D (Analog CH1/2), Audio D-A (Monitor), Analog Betacam audio (LAU) PB circuit
	12	APR-13	Audio A-D (Analog CH3/4), Audio D-A (Analog CH1/2/3/4)
	13	DIF-44	Audio signal processor, AES/EBU interface (optional kit BKNW-105)
RF process	14	* EQ-56	RF equalizer (REC current cont., PB EQ, Analog BETACAM PB buffer, Inner error correction)
System/servo control	15	SS-63	System control, Servo control
	16	MS-50	Solenoids driver (Pinch, Brakes, Cleaning), Sensors input, Degaussing head driver
	17	DR-315	Motors driver (Drum, Capstan, Reels, Threading, Reel shift, Cassette up/down)
	18	TC-96	TC REC/PB circuit, TC/FULL erase OSC
Mech. deck driver/sensor	19	SE-341	Connection board with Condensation sensor
	20	PTC-54	Threading FG
	21	CCM-15	Threading motor
	22	CCM-15	Reel shift motor
	23	PD-35	Pinch solenoid connection, Tape end sensor connection
	24	TR-79	T tension sensor, Threading-end and Unthreading-end sensors
	25	PTC-59	Cassette's holes sensor
	26	RM-82	T reel motor
	27	SE-344	T reel FG
	28	RM-82	S reel motor
	29	SE-344	S reel FG
	30	PTC-71	Reel position sensors
	31	TR-78	S tension sensor

\*: The actual name varies depending on the model.

Model name	DPR-71	VPR-17	DEC-65	DM-89	TBC-24	TBC-23	APR-12	EQ-56
DNW-A100	DPR-71	VPR-17	————	DM-89	TBC-24	TBC-23	APR-12	EQ-56
DNW-A100P	DPR-71	VPR-17P	————	DM-89P	TBC-24P	TBC-23PG	APR-12P	EQ-56
DNW-A50/A45	DPR-71B	VPR-17	————	DM-89	TBC-24	TBC-23	APR-12	EQ-56B
DNW-A50P/A45P	DPR-71B	VPR-17P	————	DM-89P	TBC-24P	TBC-23PG	APR-12P	EQ-56B
BKDW-505	————	————	DEC-65	————	————	————	————	————
BKDW-506 (CE)	————	————	DEC-65P	————	————	————	————	————
BKDW-506 (UC)	————	————	DEC-65PG	————	————	————	————	————

System configuration	No.	Generic name	Circuit function
Cassette compartment	32	CL-29	Cassette up/down motor, Cassette down sensors
	33	LP-81	Lamp of cassette compartment
	34	PC-70	Cassette-in sensors, Cassette size sensor
Front panel	35	FP-91	Panel function (Switches, LEDs) control, CAV control level conversion
	36	VR-223	Audio REC and Phone level VRs, Phone connector
	37	VR-224	Audio PB level VRs
	38	* SWC-30	Upper control panel function (Switches, LEDs)
	39	SWC-31	Sub control panel function
	40	* KY-364	Lower control panel function
	41	PTC-69	Search dial sensor, Dial solenoid connection
Motherboard, connector panel	42	MB-648	Motherboard, Remote control connectors (REMOTE-IN, RS-232C, VIDEO CONTROL)
	43	CP-277	Connector board (Analog video) with input/output buffer
	44	CP-278	Connector board (Analog audio input/output)
	45	CP-308	Connector board (AES/EBU input/output) (optional kit BKNW-105)
	46	* CP-297	CP-297: Connector board (SDI input/output, SDDI output) with S-P and P-S CP-297B: Connector board (SDI input/output) with S-P and P-S
	47	CP-300	Connector board (SDDI input) with S-P (optional kit BKNW-103 for DNW-A100/A100P only)
	48	CP-301	Connector board (TC input/output, MONITOR output)
Power	49	AC-169	AC connector board with Breaker
	50	PS unit	Switching regulator (PS=Power supply)
Hard disk protect	51	SE-378	Thermo sensor, Heat up
Hard disk drive	52,53	HDD unit	1 pair; REC/PB time maximum 90 minutes (for DNW-A100/A100P/A50/A50P) REC/PB time maximum 45 minutes (for DNW-A45/A45P)

\*: The actual name varies depending on the model.

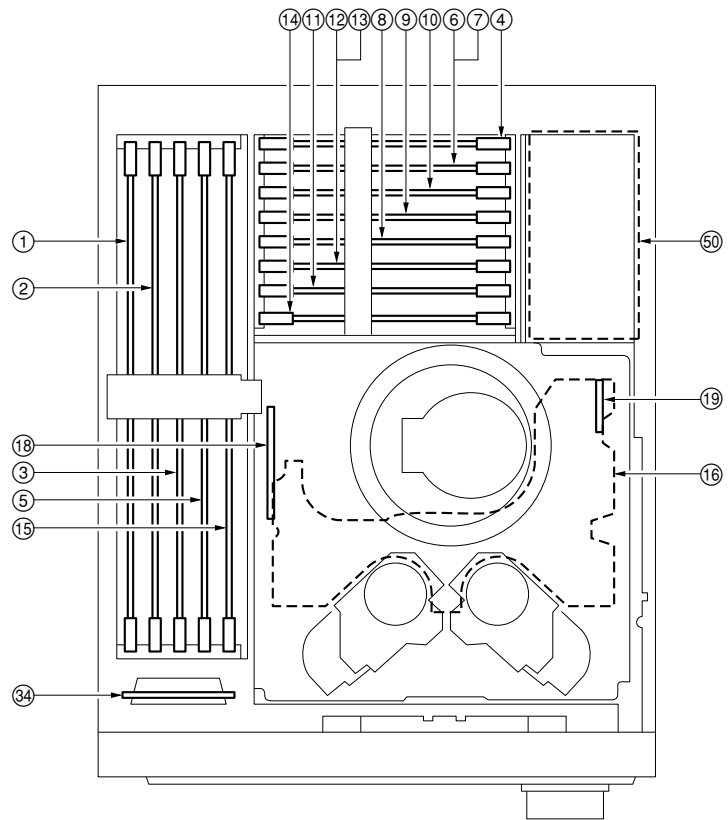
Model name	SWC-30	KY-364	CP-297
DNW-A100	SWC-30	KY-364	CP-297
DNW-A100P	SWC-30	KY-364	CP-297
DNW-A50/A45	SWC-30B	KY-364B	CP-297B
DNW-A50P/A45P	SWC-30B	KY-364B	CP-297B

## 2-8. Location of Main Part

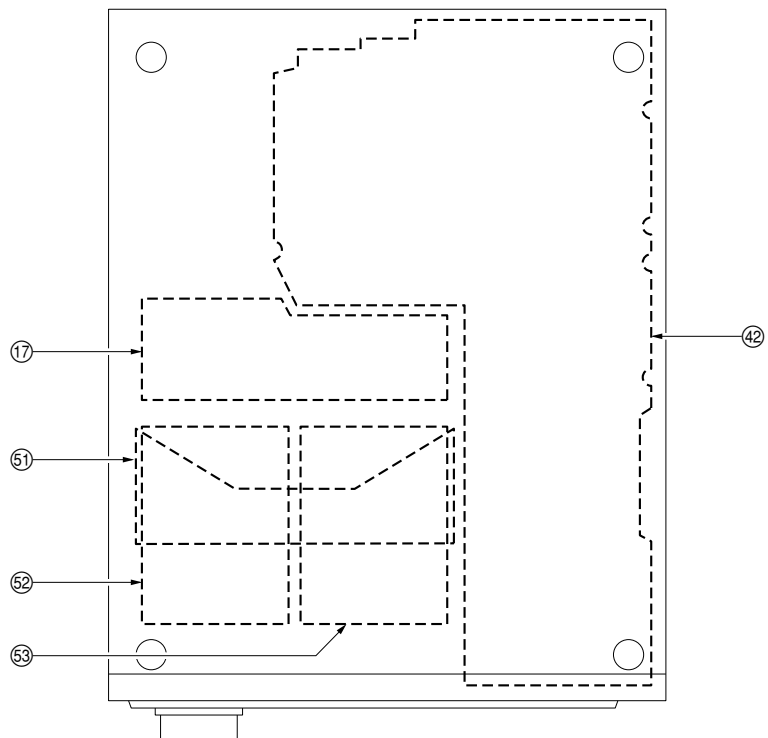
### 2-8-1. Printed Circuit Boards, Power Supply Unit, and HDD Units Location

AC-169 .....	(49)
AD-105 .....	(7) (BKNW-104)
APR-12 .....	(11)
APR-13 .....	(12)
CCM-15 .....	(21) (22)
CL-29 .....	(32)
CP-277 .....	(43)
CP-278 .....	(44)
CP-297 .....	(46)
CP-300 .....	(47) (BKNW-103)
CP-301 .....	(48)
CP-308 .....	(45) (BKNW-105)
DEC-65 .....	(6) (BKDW-505/506)
DIF-42 .....	(4)
DIF-44 .....	(13) (BKNW-105)
DM-89 .....	(8)
DPR-71 .....	(2)
DPR-73 .....	(3)
DR-315 .....	(17)
EQ-56 .....	(14)
FP-91 .....	(35)
KY-364 .....	(40)
LP-81 .....	(33)
MB-648 .....	(42)
MS-50 .....	(16)
PC-70 .....	(34)
PD-35 .....	(23)
PTC-54 .....	(20)
PTC-59 .....	(25)
PTC-69 .....	(41)
PTC-71 .....	(30)
RM-82 .....	(26) (28)
SE-341 .....	(19)
SE-344 .....	(27) (29)
SE-378 .....	(51)
SS-63 .....	(15)
SSX-1 .....	(1)
SWC-30 .....	(38)
SWC-31 .....	(39)
TBC-23 .....	(10)
TBC-24 .....	(9)
TC-96 .....	(18)
TR-78 .....	(31)
TR-79 .....	(24)
VPR-17 .....	(5)
VR-223 .....	(36)
VR-224 .....	(37)

HDD .....	(52) (53)
Power supply unit ...	(50)

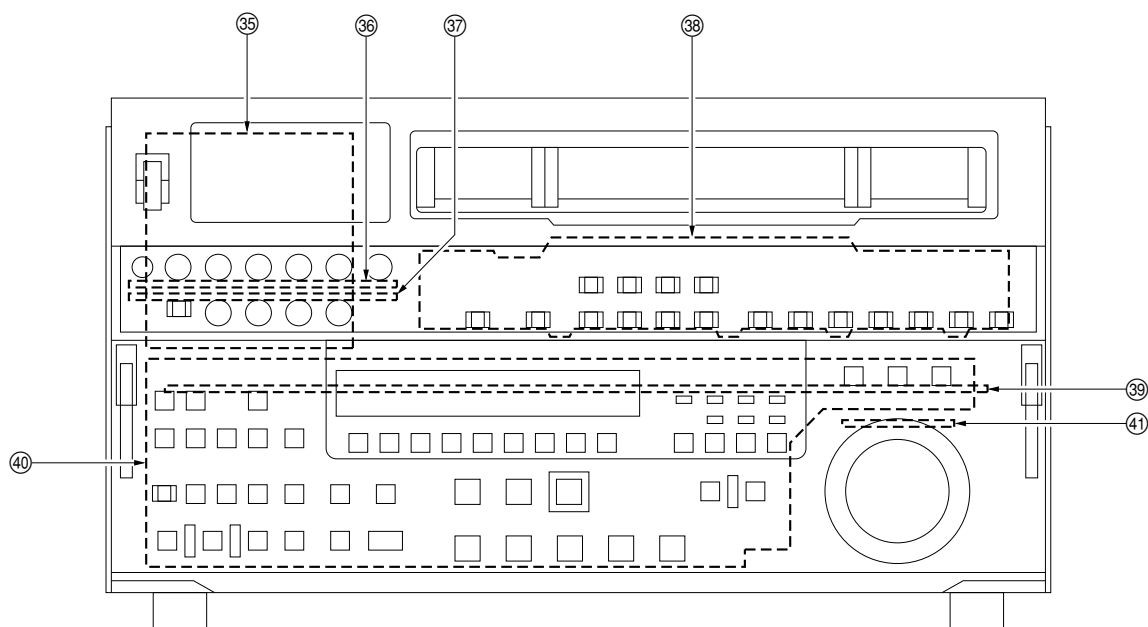


< Top View >

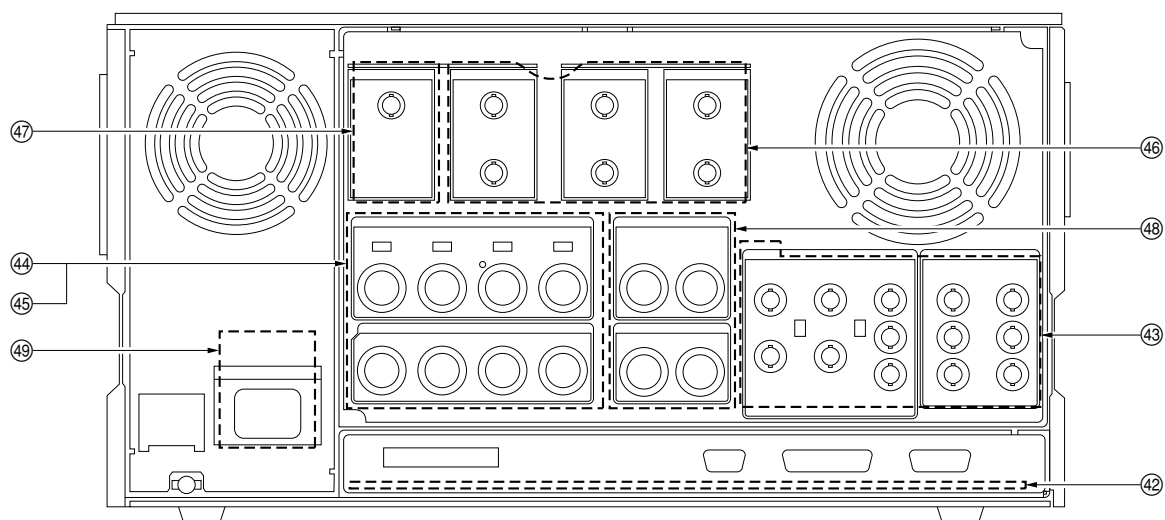


< Bottom View >





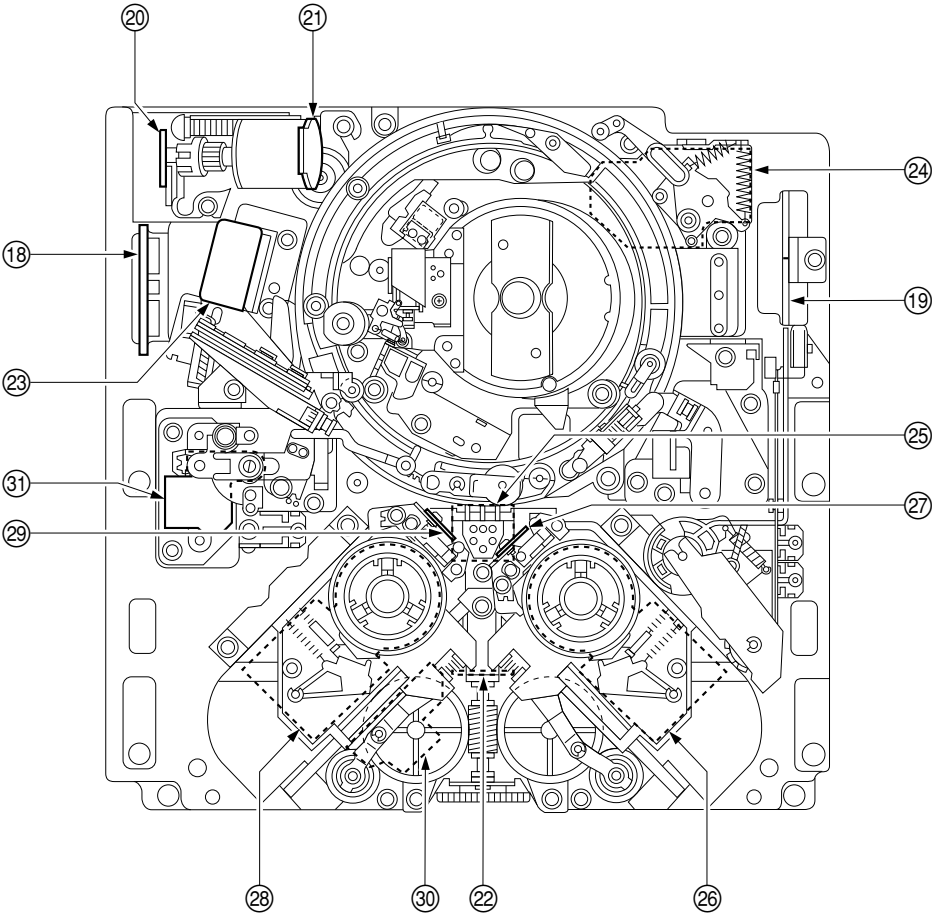
&lt; Front View &gt;



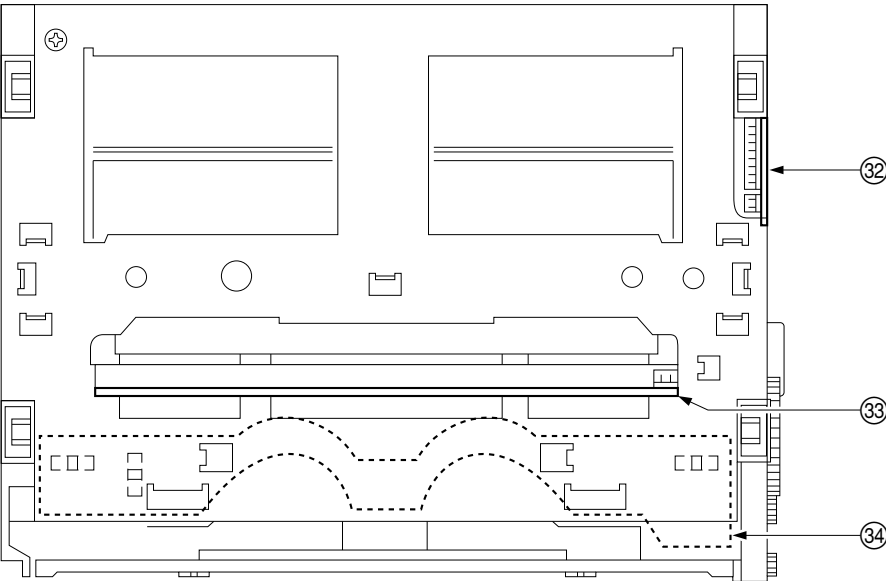
&lt; Rear View &gt;

**Note**

There figures are for DNW-A100.

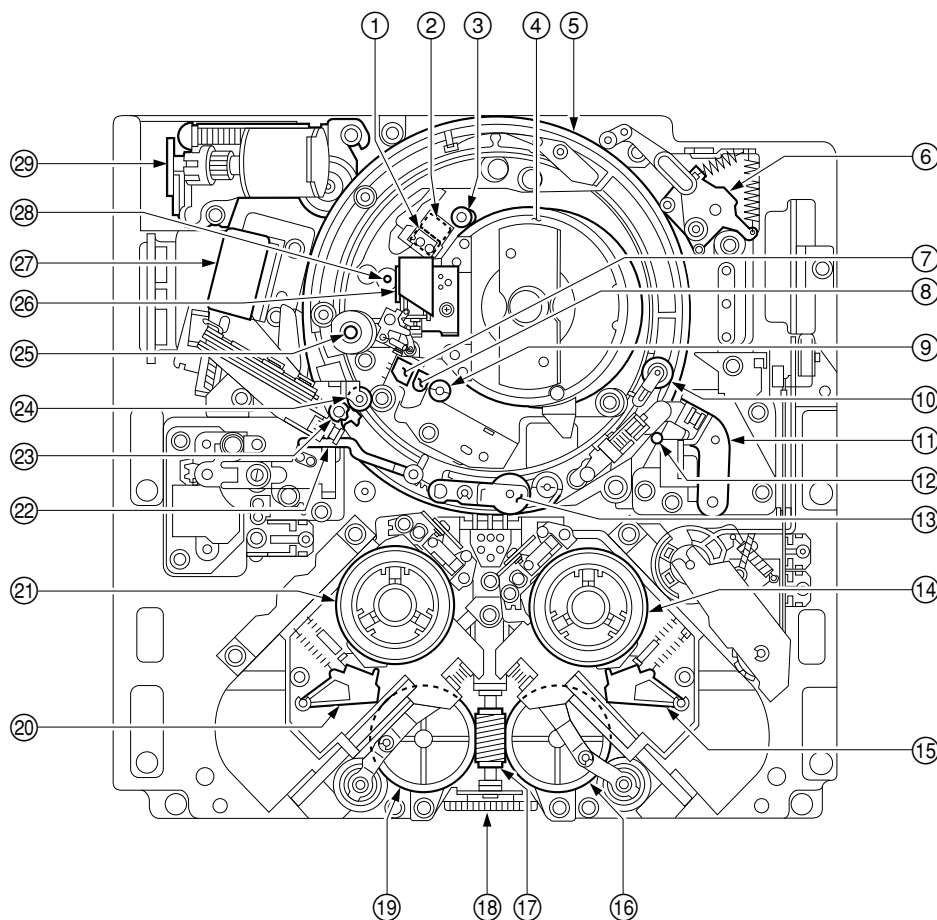


< Top View of Mechanical Deck >



< Top View of Cassette Compartment >

## 2-8-2. Main Mechanical Parts Location

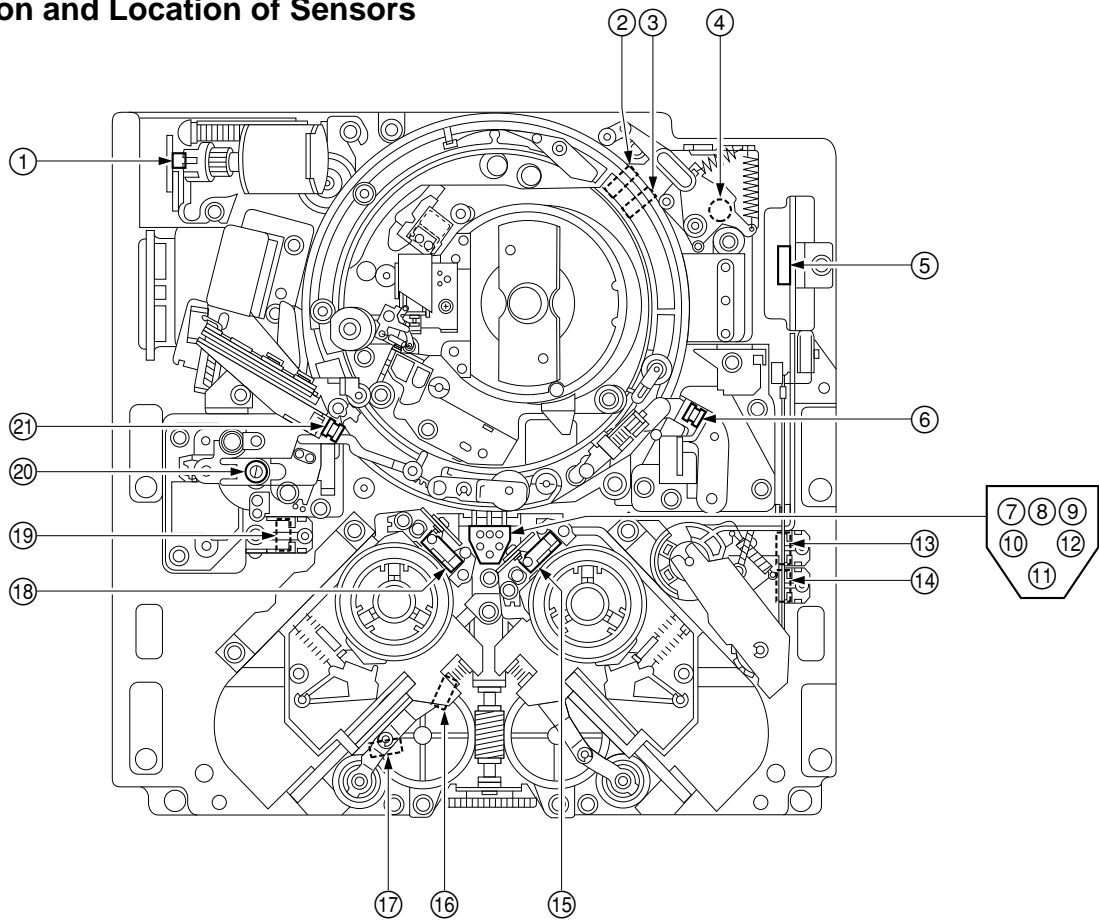


< Top View of Mechanical Deck >

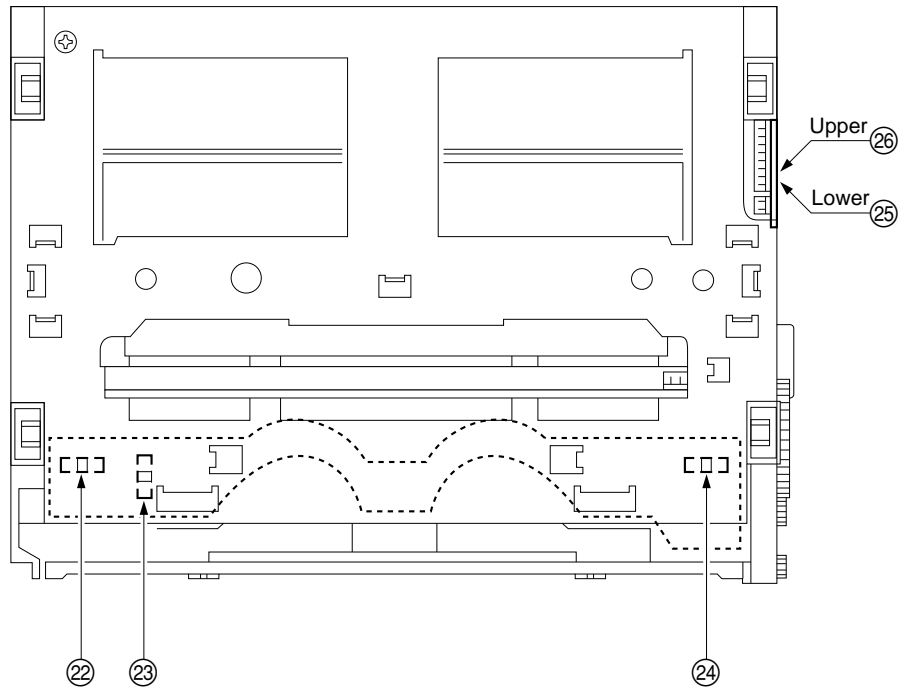
### INDEX

- |                           |                          |
|---------------------------|--------------------------|
| ① Audio/TC head           | ①⑥ T worm wheel          |
| ② Audio/TC erase head     | ①⑦ Worm gear             |
| ③ TG-3 tape guide         | ①⑧ Drive gear            |
| ④ Head drum               | ①⑨ S worm wheel          |
| ⑤ Threading ring          | ②① S brake assembly      |
| ⑥ T tension regulator arm | ②② S tension regulator   |
| ⑦ Full erase head         | ②③ Tape cleaner          |
| ⑧ CTL head                | ②④ TG-0 tape guide       |
| ⑨ TG-2 tape guide         | ②⑤ Capstan shaft         |
| ⑩ Audio/TC head cleaner   | ②⑥ Cleaning roller block |
| ⑪ T drawer arm            | ②⑦ Pinch press block     |
| ⑫ TG-10 tape guide        | ②⑧ TG-4 tape guide       |
| ⑬ Pinch roller            | ②⑨ Threading gear block  |
| ⑭ T reel table            |                          |
| ⑮ T brake assembly        |                          |

2-9. Function and Location of Sensors



< Top View of Mechanical Deck >



< Top View of Cassette Compartment >

- ① **Threading motor FG sensor**  
This sensor detects the rotation speed of the threading motor. The output signal of this sensor is input to the threading motor servo circuit to control the threading/unthreading speed to protect the tape during threading and unthreading.
- ② **Unthreading-end sensor**
- ③ **Threading-end sensor**  
These sensors detect whether the threading ring reaches the threading-end or unthreading-end position.
- ④ **T tension regulator arm sensor**  
This sensor detects the position of a T tension regulator arm. During recording and playback, the output signal of this sensor is input to the T reel motor servo circuit to control the reel torque to keep a constant T tape tension.
- ⑤ **Condensation sensor**  
This sensor detects whether the dew condensation occurs in the unit.
- ⑥ **Tape top sensor**  
This sensor detects the beginning of the tape, and in addition detects the end of the tape that runs in the reverse direction.
- ⑦ **Reel hub diameter sensor**  
This sensor detects the reel hub diameter detection tab of a cassette.  
The reel hub with two types of diameters (thin and thick) is available according to the length of a tape stored in a cassette. This sensor is used to discriminate the diameter. The output of this sensor is input to the servo circuit of take-up and supply reel motors so as to control the reel rotation speed and torque during tape transport.
- ⑧ **Metal/oxide tape sensor**  
This sensor detects the metal tape detection tab of a Betacam/Betacam SP cassette.  
This sensor is used to discriminate whether the tape stored in a Betacam/Betacam SP cassette is an oxide tape or metal particle tape.
- ⑨ **Tape thickness sensor**  
This sensor detects the tape thickness detection tab of a cassette.  
This sensor is used to discriminate the thickness of the tape stored in a cassette.
- ⑩⑪⑫ **Cassette classification sensors**  
These sensors detect the three cassette type detection tabs of a cassette.  
These sensors are used to discriminate whether a cassette can be used in this unit.
- ⑬ **L cassette (SP) REC inhibit sensor**  
This sensor (switch) detects the condition of a REC inhibit plug for the Betacam/Betacam SP large cassette.
- ⑭ **L cassette (SX) REC inhibit sensor**  
This sensor (switch) detects the condition of a REC inhibit plug for the Betacam SX large cassette.
- ⑮ **T reel table FG sensor**  
This sensor detects the rotation speed of the take-up reel motor. The sensor output signal is input to the reel motor servo circuit to control the reel table rotation speed.
- ⑯ **Reel S position sensor**
- ⑰ **Reel L position sensor**  
These sensors detect whether the reel table moves to the correct position according to the size of the inserted cassette.
- ⑱ **S reel table FG sensor**  
This sensor detects the rotation speed of the supply reel motor. The sensor output signal is input to the reel motor servo circuit to control the reel table rotation speed.
- ⑲ **S cassette REC inhibit sensor**  
This sensor (switch) detects the condition of a REC inhibit plug for the small cassette.
- ⑳ **S tension regulator arm sensor**  
This sensor detects the position of an S tension regulator arm. During recording and playback, the sensor output signal is input to the S reel motor servo circuit to control the reel torque to keep a constant S tape tension.
- ㉑ **Tape end sensor**  
This sensor detects the end of the tape that runs in the forward direction.
- ㉒ **Cassette -in sensor (L)**  
This sensor detects whether a cassette is being inserted.
- ㉓ **Cassette size sensor**  
This sensor detects whether the inserted cassette is L size or S size.
- ㉔ **Cassette-in sensor (R)**  
This sensor detects whether a cassette is being inserted.
- ㉕ **Cassette-down (2) sensor**
- ㉖ **Cassette-down (1) sensor**  
These sensors detect the movement (position) of a cassette compartment by the combination of the detection state of the two sensors and a cassette-in sensor.

### Heat up sensor

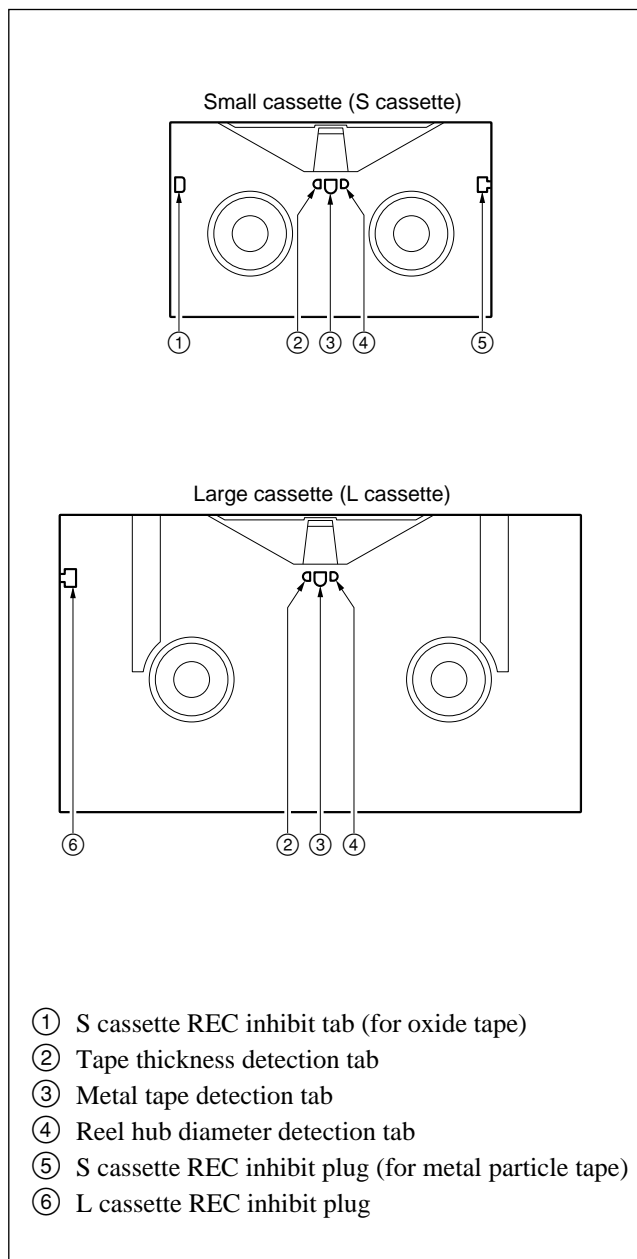
This sensor determines the temperature of the hard disk drive.

Heats the hard disk drives by the heat up device when the temperature becomes less +5°C.

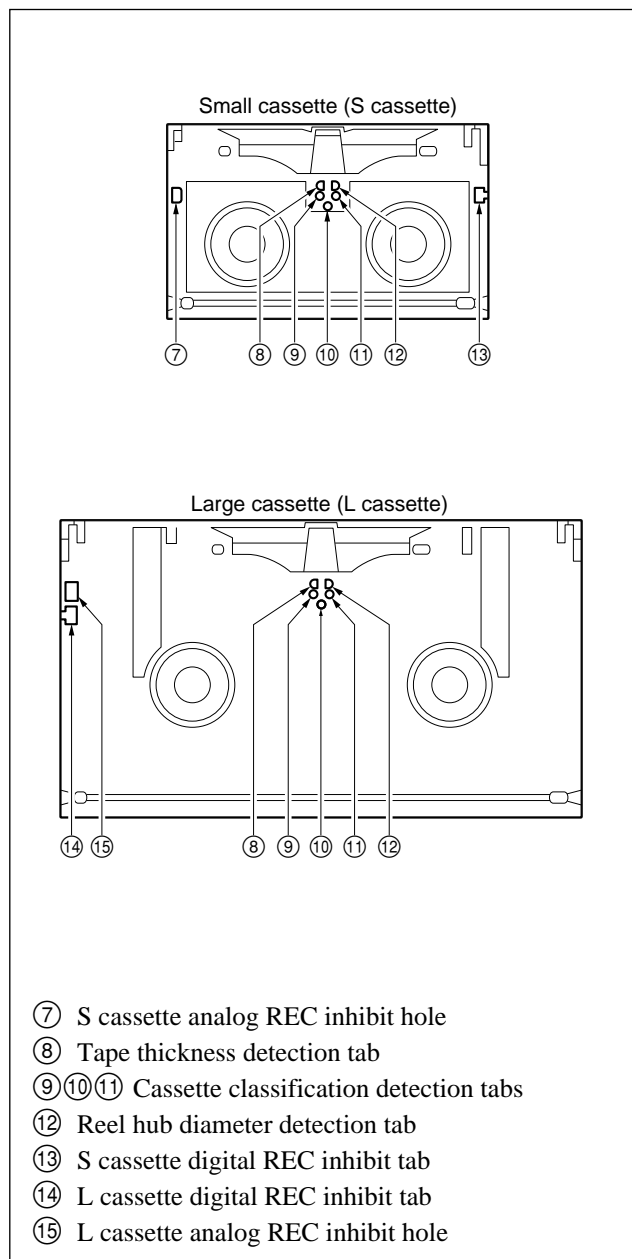
## 2-10. System of Cassette

As shown in the figure below, plugs and tabs are provided at the back side of the cassette tape.

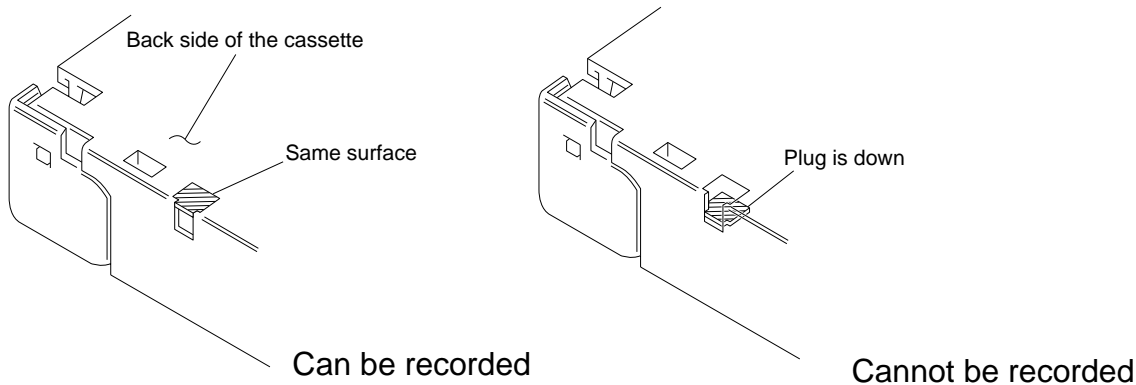
### Cassette for Betacam or Betacam SP



### Cassette for Betacam SX



REC Inhibit Plugs



Detection Tabs

In cassette for Betacam or Betacam SP

No.	Use	With tab (Close hole)	Without tab (Open hole)
②	Tape thickness detection	Thick (Tape thick is 20 μm)	Thin (Tape thick is 15 μm)
③	Metal tape detection	Oxide tape	* Metal particle tape
④	Reel hub diameter detection	Small hub	Large hub

\* : For the metal particle tape, digital recording can be performed using a Betacam SX format.

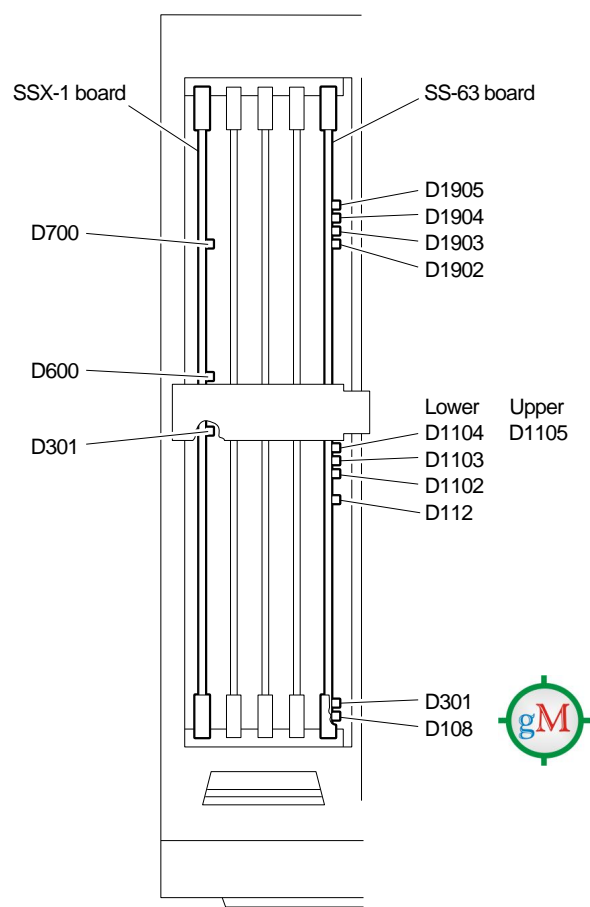
In cassette for Betacam SX

No.	Use	With tab (Close hole)	Without tab (Open hole)
⑧	Tape thickness detection	Tape thick is 14.5 μm	Tape thick is less than 14.5 μm
⑫	Reel hub diameter detection	Small hub	Large hub
⑨⑩⑪	Cassette classification detection	Without tab at only ⑨ for Betacam SX cassette. (Open hole) Represents the cassette classification by combination of three tabs. (See below)	

Cassette classification detection tabs ○ : with tab (close hole), ● : without tab (Open hole)

State of tabs ⑨⑩⑪	Cassette class	Remake
○○○	Betacam or Betacam SP	——
●○○	Betacam SX	——
○○●	Digital Betacam	Unusable
●●, ●○, ○●, ○●, ●●	Except the above class	Unusable

2-11. Information of LEDs on Circuit Boards



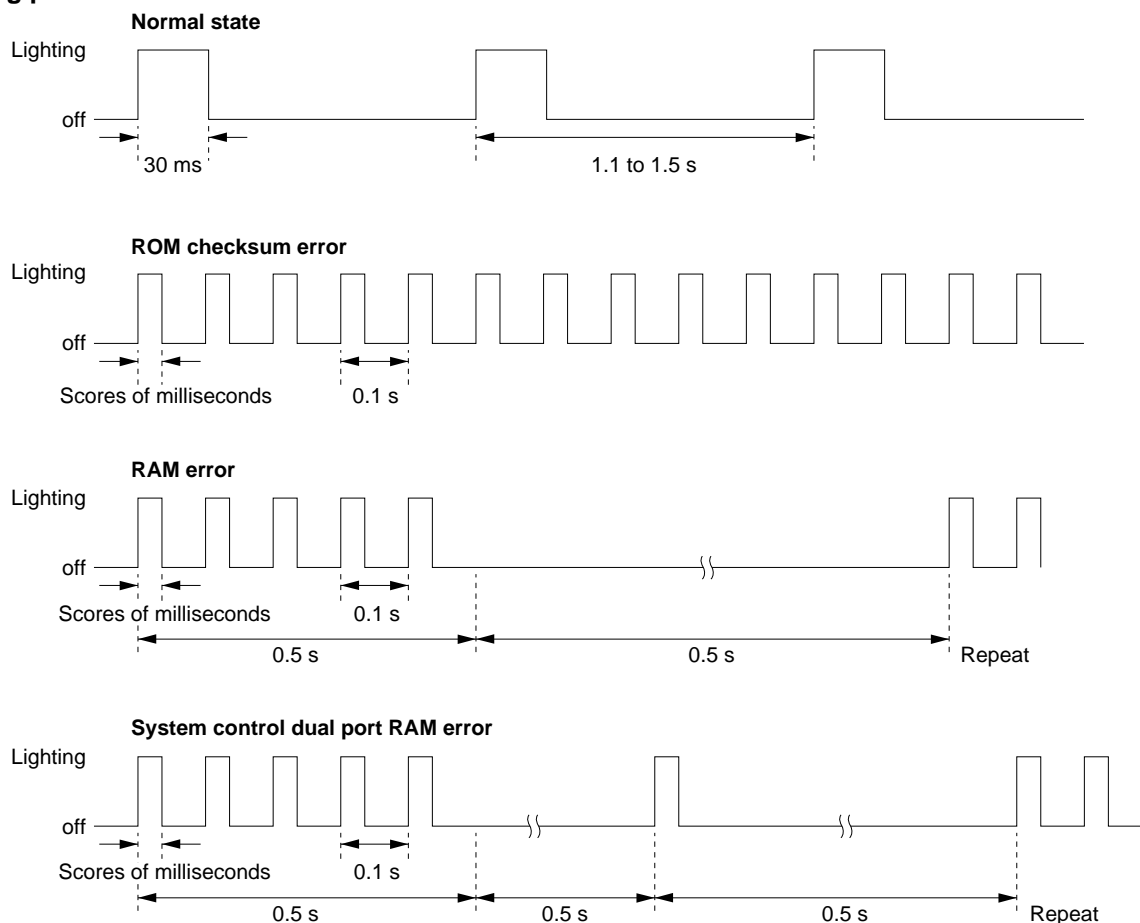
SSX-1 board

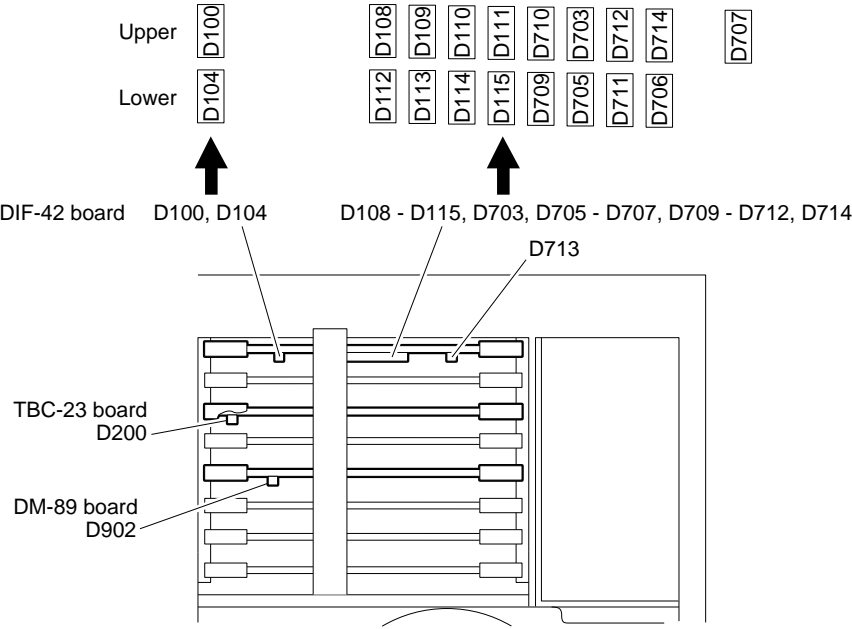
LED No.	Name	Color	Description	Normal state
D301	ERROR	Red	Lights when an error occurs in microcomputer.	Blinks or Lightless
D600	SDDI RX	Red	Lights when SDDI signal is input to SSX-1 board.	——
D700	SDDI TX	Red	Lights when SDDI signal is output from SSX-1 board.	——



**SS-63 board**

LED No.	Name	Color	Description	Normal state
D108	SV	Amber	Represents the result of communication check to ROM and RAM after power on by blinking state.	Blinks
D112	TRVR	Amber	Lights when the tracking VR is enable.	Lightless
D301	DRUM	Amber	Blinks during the drum microcomputer (on SS-63 board) under normal operation. Usually lights for 30 ms at intervals of 1.1 to 1.5 s. The blinking interval is inverted when the drum is locked.	Blinks
D1102	SY1 STS1	Green	Blinks when SYS1 CPU operates normally.	Blinks
D1103	SY1 STS2	Green	Lights when between SYS1 and KEY PANEL (KY-364) communicate normally. Lightness when between SYS1 and KEY PANEL (KY-364) communicate abnormally.	Lights
D1104	MAINT	Green	Lights during maintenance mode is performed.	Lightness
D1105	SY1 ERR	Red	Lights SYS1 CPU does not operate normally. Blinks when between SYS1 CPU and other CPU (SYS2 KY) communicate abnormally.	Lightness
D1902	SY2 STS1	Green	Blinks when SYS2 CPU operates normally.	Blinks
D1903	SY2 STS2	Green	Lights when between SYS2 and SV CPU communicate normally. Lightness when between SYS2 and SV CPU communicate abnormally.	Lights
D1904	SY2 STS3	Green	Lights when between SYS2 and SY1 CPU communicate normally. Lightness when between SYS2 and SY1 CPU communicate abnormally.	Lights
D1905	SY2 ERR	Red	Lights when SYS2 CPU does not operate normally. Blinks when between SYS2 CPU and other CPU (SYS1, SV) communicate abnormally.	Lightness

**Blinking pattern of D108 on SS-63 board**



**DM-89 board**

LED No.	Name	Color	Description	Normal state
D902	ADJUST	Amber	Usually lights for scores of milliseconds at intervals of about 1 s. The blinking interval is inverted when the DM-89 board is in the adjustment mode: when switch S901-No.1 on DM-89 board is set to ON.	Blinks

**TBC-23 board**

LED No.	Name	Color	Description	Normal state
D200	TBC	Amber	Lights once a second during TBC microcomputer (on TBC-23 board) under normal condition.	Blinks

**DIF-42 board**

LED No.	Name	Color	Description	Normal state	
				525/60 mode	625/50 mode
D100	RX AUDIO EXIST CH-1	Green	Lights when an AUDIO CH-1 signal is detected from the signal received by the SDI INPUT connector.	Lights	Lights
D104	RX AUDIO ERROR CH-1	Red	Lights when an error occurs in the AUDIO CH-1 signal detected from the signal received by the SDI INPUT connector or when an AUDIO CH-1 signal cannot be received normally.	Lightless	Lightless
D108	RX EDH D1	Green	Lights when the signal received by the SDI INPUT connector conforms to the 4:2:2 component format.	Lights	Lights
D109	RX EDH 525	Green	Lights when the EDH circuit block discriminated that the signal received by the SDI INPUT connector is a 525/60 system signal.	Lights	Lightless
D110	RX EDH EXIST	Green	Lights when the EDH circuit block detected that the SDI format signal exists in the SDI INPUT connector.	Lights	Lights
D111	RX EDH VALIDITY	Green	Lights when the signal received by the SDI INPUT connector conforms to the EDH.	Lights	Lights
* D112	RX EDH OTHER ANC ERROR	Red	Lights when other ancillary data exists in the EDH block of the signal received by the SDI INPUT connector.	Lightless	Lightless
* D113	RX EDH AP ERROR	Red	Lights when a active picture EDH error is detected from the signal received by the SDI INPUT connector.	Lightless	Lightless
* D114	RX EDH FF ERROR	Red	Lights when a full-field EDH error is detected from the signal received by the SDI INPUT connector.	Lightless	Lightless
* D115	RX EDH ANC ERROR	Red	Lights when a ancillary data EDH error is detected from the signal received by the SDI INPUT connector.	Lightless	Lightless
D703	SDI INPUT EXIST	Green	Lights when detected that the SDI format signal exists in the SDI INPUT connector.	Lights	Lights
D705	SDI TRS ERROR	Red	Lights when the SDI format signal cannot be received normally from the SDI INPUT connector.	Lightless	Lightless
D706	SDI 625	Green	Lights when the SDI format signal received by the SDI INPUT connector is a 625/50 system signal.	Lightless	Lights
D707	INDEX ERROR	Red	Lights when no color frame information is contained in the signal received by the SDI INPUT connector or when the information is not correct.	Lightless	Lightless
**D709	SDDI TRS ERROR	Red	Lights when the SDDI format signal cannot be received normally from the SDDI INPUT connector.	Lightless	Lightless
**D710	SDDI INPUT EXIST	Green	Lights when detected that the SDDI format signal exists in the SDDI INPUT connector.	Lights	Lights
**D711	SDDI 625	Green	Lights when the signal received by the SDDI INPUT connector is a 625/50 system signal.	Lightless	Lights
**D712	SDDI 525	Green	Lights when the signal received by the SDDI INPUT connector is a 525/60 system signal.	Lights	Lightless
D713	VCO ADJ	Green	Lights when electronic volume (EVR) data comes near the proper value during VCO free-running adjustment in the maintenance mode.	Lightless	Lightless
D714	SDI 525	Green	Lights when the signal received by the SDI INPUT connector is a 525/60 system signal.	Lights	Lightless

\*: There LEDs normally functions when the signal received conforms to the EDH.

\*\*: There LEDs normally functions only the DNW-A100/A100P with a optional kit BKNW-103.

EDH: Error Detection and Handling

## 2-12. How to Take Out the Cassette when the Tape is Slacking

### CAUTION

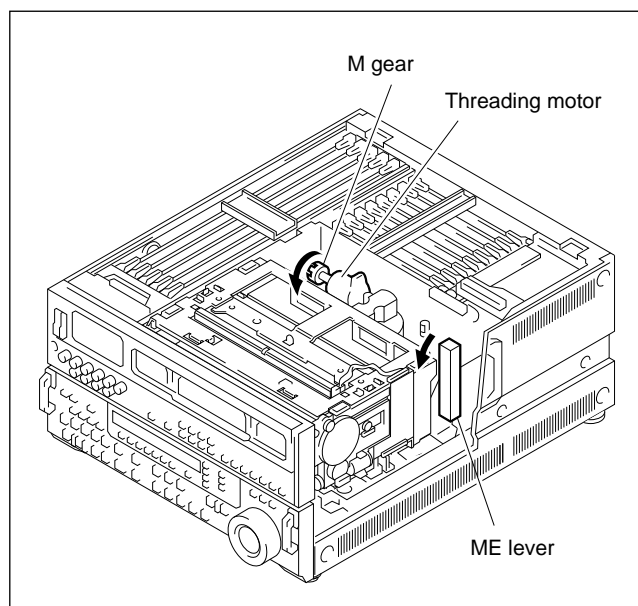
For your safety, turn off the power and unplug the power cord before starting the working.

When the tape is slacked in VTR, take out the cassette tape in the procedure below.

### Note

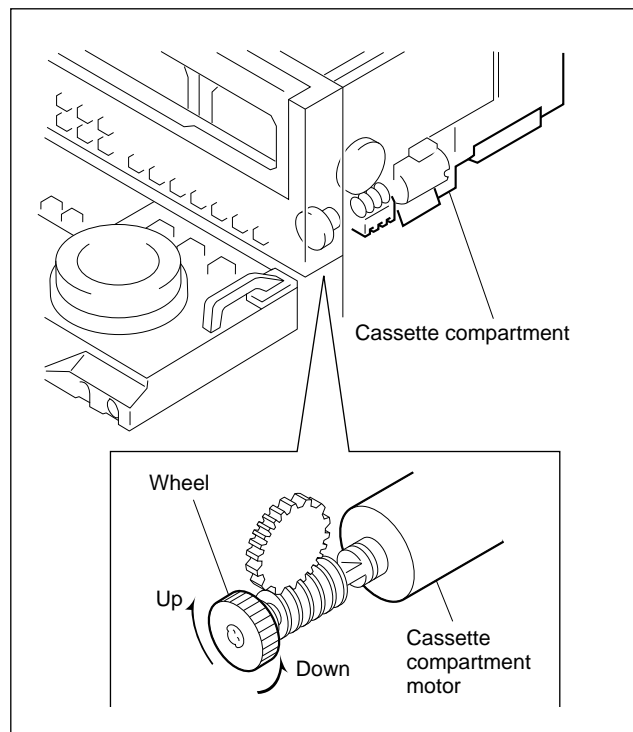
The tape may be damaged. Take out the cassette tape with care.

1. Turn off the POWER switch.
2. Remove the upper lid.  
(Refer to “2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation”.)
3. Remove the plate MD assembly.  
(Refer to “2-4. Plate MD Assembly removal/Installation”.)
4. Rotate the M gear of the threading motor block in the direction of the arrow with fingers by about a half turn and slacken the tape.
5. Shift the ME lever toward the front panel side and wind the tape inside the cassette.



6. Repeat steps 4 and 5 until the tape is wound completely.

7. Take both side handles of a lower control panel and pull them slightly forward, then pull them more strongly. Then the lower control panel tilts upward (to 90 degrees position).
8. Turn the wheel of the cassette compartment motor show in the figure clockwise until the cassette is ejected completely.

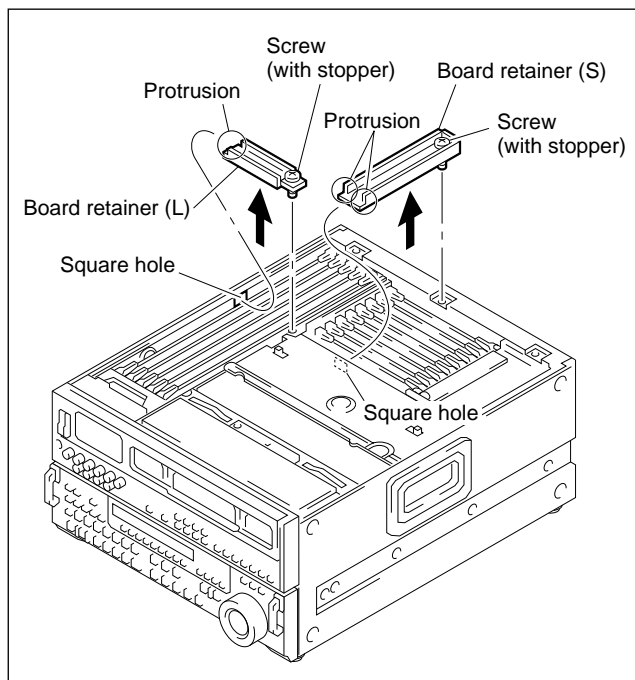


## 2-13. Pulling Out/Insertion of Plug-in Board

### Notes

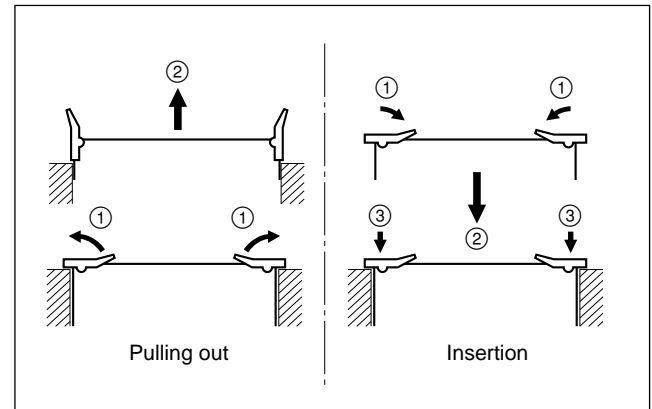
- Turn off the power and unplug the power cord before starting the removal/installation.
- When the plug-in board is replaced, refer to section 6.

1. Remove the upper lid.  
(Refer to “2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation”.)
2. Loosen a screw, and remove the board retainer (L) or (S).



3. To pull out the SSX-1, TBC-23, or TBC-24 board, disconnect the connected harness from the board to be removed.  
SSX-1 board : CN400  
TBC-23 board : CN1  
TBC-24 board : CN1

4. Pull up the eject levers on the board to the direction of the arrows. (Disconnected from motherboard.)
5. Hold the eject levers and pull out slowly the board.



6. To pull out the APR-12 or EQ-56 board, disconnect the connected harnesses from the board to be removed.  
APR-12 board : CN500 (A-1) ..... 3P Red  
                  CN600 (G-1) ..... 3P Yellow  
EQ-56 board : CN100 (B-7) ..... 6P White  
                  \*CN300 (A-2) ..... 3P White  
                  \*CN400 (G-1) ..... 3P Red  
                  CN500 (A-4) ..... 4P White  
                  CN600 (G-4) ..... 4P Red  
                  CN601 (G-5) ..... 4P Yellow  
                  \*CN1300 (A-3) ..... 3P Black  
                  \*CN1400 (G-2) ..... 3P Yellow  
                  CN1500 (A-5) ..... 4P Black  
                  \* : DNW-A100/A100P only

For insertion, perform in the reverse procedures of pulling out.

### Notes

- After board insertion, push the two eject levers simultaneously and connect them firmly to the connector on the motherboard (MB-648 board).
- To install the board retainer, tighten the screw after insert the protrusion of the board retainer into the square hole of chassis.

## 2-14. Fixtures and Adjustment Equipment List

### 2-14-1. Fixtures

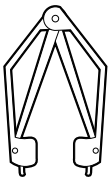
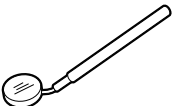
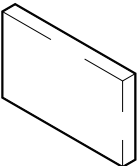
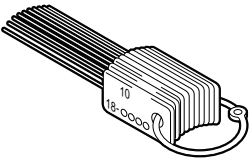
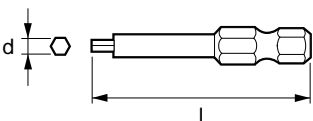
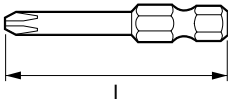
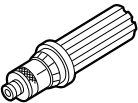
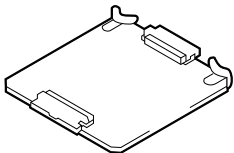
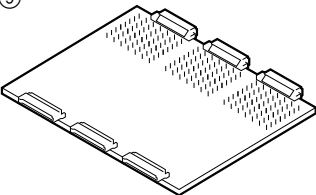
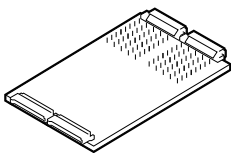
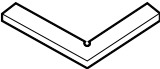
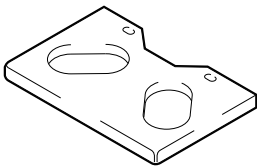
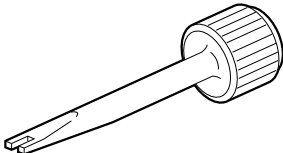
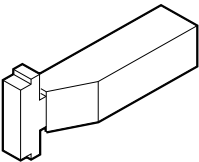
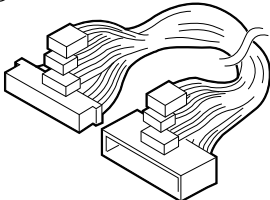
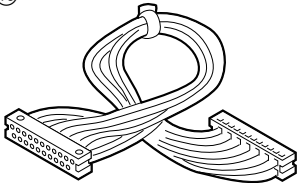
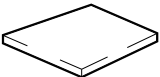
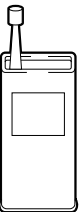


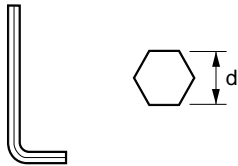
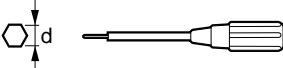
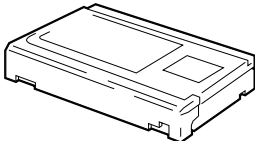
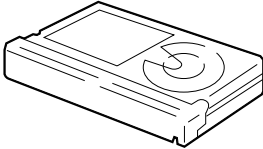
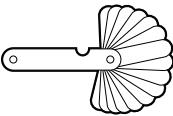

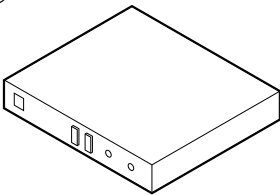
**Note**

The tools that are used only in the Maintenance Manual Part 2 are also described.

Fig. No.	Part No.	Description	[Inscription No.]	For use
1	J-6035-070-A	Extraction tool (for PLCC socket)	—	Extraction of IC (PLCC type)
2	J-6080-029-A	Small dental mirror (round type ø12)	—	Cassette pillar height adjustment
3	J-6086-570-A	Reference flat plate	[SL-657]	AT head zenith adjustment
4	J-6152-450-A	Wire clearance check gauge set	—	Clearance check
5	J-6251-090-A	Torque screwdriver's hexagonal bit (d=2.5 mm, l=120 mm)	—	Tightening screws to fix a drum assembly and upper drum assembly
	J-6323-440-A	Torque screwdriver's hexagonal bit (d=0.89 mm, l=50 mm)	—	Tightening screws to fix a tension regulator roller
6	J-6323-420-A	Torque screwdriver's bit (+2 mm, l=75 mm)	—	Tightening screws to fix a brush/slip ring assembly
	J-6323-430-A	Torque screwdriver's bit (+3 mm, l=50 mm)	—	Tightening screws to fix a reel motor assembly or a ring roller
7	J-6252-510-A	Torque screwdriver (6 kg·cm)(0.6 N·m)	[JB-5251]	Tightening screws
	J-6252-520-A	Torque screwdriver (12 kg·cm)(1.2 N·m)	[JB-5252]	Tightening screws
8	J-6269-810-A	Extension board (S), EX-377	—	Extension of the small-sized plug-in board (DM, TBC, DEC, AD)
9	A-8277-211-A	Extension board (L), EX-555	—	Extension of the large-sized plug-in board
10	A-8277-212-A	Extension board (S), EX-556	—	Extension of the small-sized plug-in board (EQ, APR)
11	J-6320-870-A	Reel motor shaft slantness check fixture	[MW-087]	Reel motor shaft slantness adjustment
12	J-6320-880-A	Cassette reference plate (L)	[MW-088]	Reel table height adjustment, Reel motor shaft slantness adjustment
13	J-6322-610-A	Tape guide adjustment driver	[MW-261]	Tape path alignment
14	J-6329-350-A	Reel table height gauge	[MW-935]	Reel table height adjustment
15	1-957-071-11	Extension cable set	—	Extension of the power supply unit
16	1-952-684-11	Extension cable (14P)	—	Extension of the TBC-23 or TBC-24 board
17	3-184-527-01	Cleaning cloth (15 cm × 15 cm)	—	Cleaning
18	7-432-114-11	Locking compound (200 g)	—	Inhibits loosening of screws
19	7-661-018-18	Diamond oil NT-68 (50 ml)	—	
20	7-651-000-10	Sony grease SGL-601 (50 g)	—	
21	7-700-736-01	L-shaped hexagonal wrench (d=1.27 mm)	—	
	7-700-736-05	L-shaped hexagonal wrench (d=1.5 mm)	—	
	7-700-736-06	L-shaped hexagonal wrench (d=0.89 mm)	—	
22	7-700-766-04	Hexagonal wrench driver (d=2.5 mm)	—	
23	8-960-075-01	Alignment tape, SR5-1	—	Video/audio alignments (for 525/60 system)
	8-960-075-11	Alignment tape, SR2-1	—	Servo alignments (for 525/60 system)
	8-960-075-51	Alignment tape, SR5-1P	—	Video/audio alignments (for 625/50 system)
	8-960-075-61	Alignment tape, SR2-1P	—	Servo alignments (for 625/50 system)
24	8-960-096-01	Alignment tape, CR2-1B	—	Tracking adjustment (for analog NTSC) *1
	8-960-096-41	Alignment tape, CR5-1B (metal particle tape)	—	Video alignments (for analog NTSC) *1
	8-960-096-51	Alignment tape, CR2-1B PS	—	Tracking adjustment (for analog PAL) *2
	8-960-097-44	Alignment tape, CR5-2A (oxide tape)	—	Betacam Video alignments (for analog NTSC) *1
	8-960-097-45	Alignment tape, CR8-1A (oxide tape)	—	Betacam Audio alignments (for analog NTSC) *1
	8-960-096-91	Alignment tape, CR5-1B PS (metal particle tape)	—	Video alignments (for analog PAL) *2
	8-960-096-86	Alignment tape, CR8-1B PS (metal particle tape)	—	Audio alignments (for analog PAL) *2
	8-960-098-44	Alignment tape, CR5-2A PS (oxide tape)	—	Video alignments (for analog PAL) *2
25	8-960-098-45	Alignment tape, CR8-1A PS (oxide tape)	—	Audio alignments (for analog PAL) *2
25	9-911-053-00	Thickness gauge	—	Clearance check
26	9-919-573-01	Cleaning liquid	—	Cleaning
27	J-6332-240-A	VISC phase adjusting tool	—	VISC alignment for PAL system *2

\*1: DNW-A100/A50/A45 only

\*2: DNW-A100P/A50P/A45P only

<p>①</p> 	<p>②</p> 	<p>③</p> 	<p>④</p> 
<p>⑤</p> 	<p>⑥</p> 	<p>⑦</p> 	<p>⑧</p> 
<p>⑨</p> 	<p>⑩</p> 	<p>⑪</p> 	<p>⑫</p> 
<p>⑬</p> 	<p>⑭</p> 	<p>⑮</p> 	<p>⑯</p> 
<p>⑰</p> 	<p>⑱</p> 	<p>⑲</p> 	<p>⑳</p> 
<p>㉑</p> 	<p>㉒</p> 	<p>㉓</p> 	<p>㉔</p> 
<p>㉕</p> 	<p>㉖</p> 	<p>㉗</p> 	

## 2-14-2. Equipment for Adjustment

It is recommended to use the equipments listed below or the equivalents.

Each equipment is available as a standard product.

**Note**

The equipment that is used only in the Maintenance Manual Part 2 is also described.

Equipment	Model name	Remarks
Analog composite signal generator	Tektronix 1410	(DNW-A100/A50/A45 only)
	Tektronix 1411	(DNW-A100P/A50P/A45P only)
Analog composite signal generator	Tektronix TSG-170A	(DNW-A100/A50/A45 only)
	Tektronix TSG-271A	(DNW-A100P/A50P/A45P only)
Analog component signal generator	Tektronix TSG-300	for generating SMPTE/EBU format analog signal (DNW-A100/A50/A45 only)
	Tektronix TSG-371	for generating SMPTE/EBU format analog signal (DNW-A100P/A50P/A45P only)
Digital component signal generator	Tektronix TSG-422 (OP.1S)	for generating 4:2:2 format digital signal
Spectrum analyzer	Advantest R3261A	with external trigger function bandwidth: more than 100 MHz
Oscilloscope	Tektronix 2465B	
Component/composite wave form monitor	Tektronix WFM300A	for measuring video levels
Wave form /vector monitor	Tektronix 1750 or 1780R	for measuring analog composite SC-H (DNW-A100/A50/A45 only)
	Tektronix 1751 or 1781R	for measuring analog composite SC-H (DNW-A100P/A50P/A45P only)
Audio generator	Tektronix SG505 (OP.02)	
Audio analyzer	Tektronix AA501A (OP.02)	for measuring distortion and levels
Audio level meter	Hewlett-Packard HP3400A	
Frequency counter	Advantest TR5821AK	
Digital voltmeter	Advantest TR6845	
Monitor with serial digital input	Sony BVM-1311 (with optional accessory BKM-2085-14)	(DNW-A100/A50/A45 only)
	Sony BVM-1411 (with optional accessory BKM-2085-14)	(DNW-A100P/A50P/A45P only)
Network analyzer	Anritsu MS-420B	
Serial digital component monitor	Tektronix WFM601i	



## Section 3

### Error Message

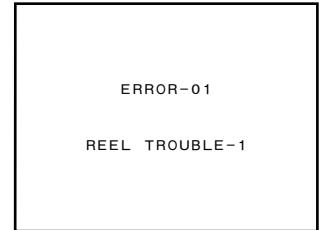
#### 3-1. Error Message

This unit has self-diagnostics function.

When trouble is detected, an ALARM indicator is lighted immediately on the lower control panel, and an error message and error code are displayed in the time data display area and event display area.

##### Note

When the error code 90 is detected, an error message is only displayed, but error code is not displayed, and the ALARM indicator is not lighted.



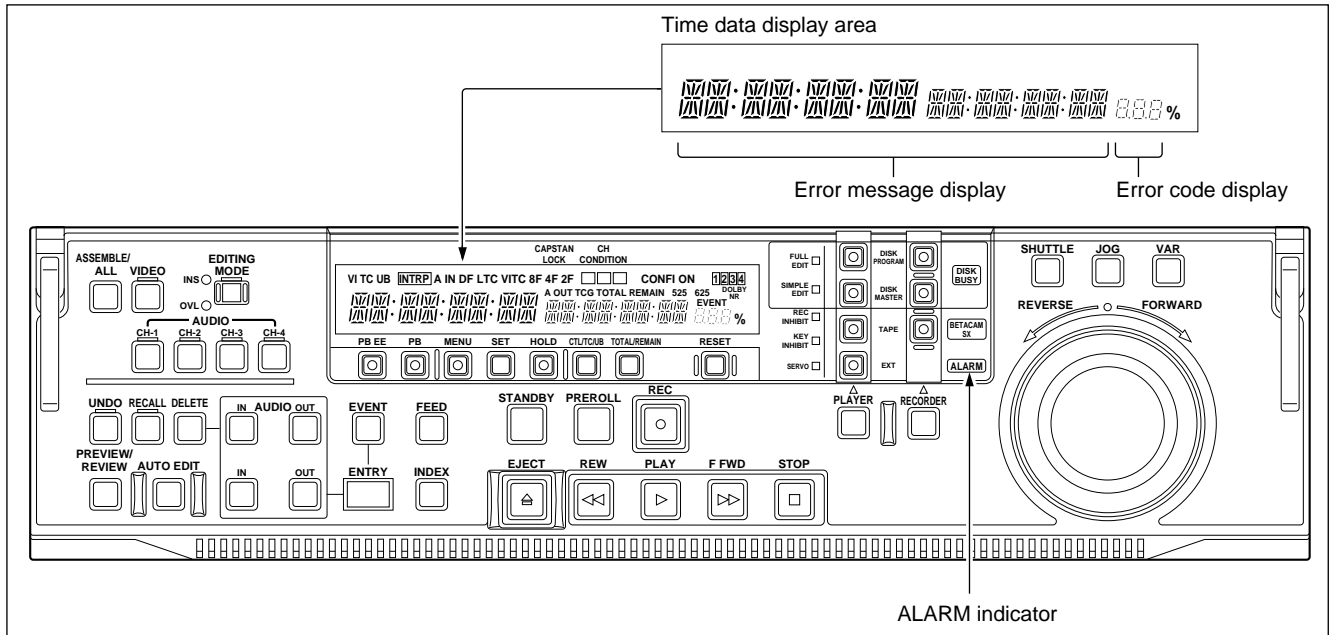
Ex. Superimposed  
on Video Monitor

Also, an error code and error message are superimposed on the video monitor connected to the VIDEO OUTPUT COMPOSITE 3 connector. Furthermore, as for the error code 92, 93, and 96, object which error occurred is displayed as sub error message on the video monitor.

##### Note

To superimpose the error message and code on the video monitor, the CHARACTER switch on the sub control panel must be set to ON.

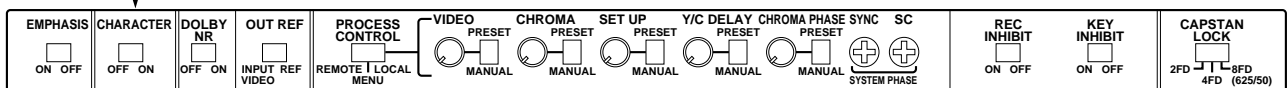
But when the error code 90 is detected, error message and code are not superimposed on the video monitor.



Error Message/Code Display Area and ALARM Indicator

**Note:** This figure is the DNW-A100/A50/A45.

CHARACTER switch : ON



CHARACTER Switch on Sub Control Panel

Error messages are described in the order of error codes on the next pages and later.

If multiple errors occur, the priority level of the error code display are as follows:

92, 93, 96, 91, 97, 98, 02, 03, 04, 05, 07, 06, 01, 09, 08, 0A, 10, 11, 12, 13, 20, 21, 22, and 23

The “protection mode” described in this text means the servo control system automatically stops the tape transport and drum motor rotation, and maintains this state. The unit cannot be automatically recovered to the normal state when the unit once enters the protection mode. When the protection mode is entered with the cassette tape inserted, take out the cassette tape manually with reference to section 2-12 (on page 2-22). Never turn the power on again without taking out the cassette tape. This may damage the tape.

## Error List

Code	Message on time data display area	Page	Description
01	REEL TROUBLE	3-3	Tape slacking is detected in the threading or unthreading operation.
02	REEL TROUBLE	3-4	Tape slacking or tape breaking is detected in the SEARCH, FF, or REW mode.
03	REEL TROUBLE	3-5	Tape slacking, tape breaking, or supply or take-up reel locking is detected in the REC or PLAY mode.
04	REEL TROUBLE	3-6	An malfunctional tape transport speed is detected in the FF or REW mode.
05	REEL TROUBLE	3-6	The malfunctional operation of the supply or take-up reel is detected during cassette insertion.
06	TAPE TENSION	3-7	Excessive tape tension is detected in the REC or PLAY mode.
07	CAPSTAN TROUBLE	3-7	Malfunction of capstan motor is detected.
08	DRUM TROUBLE	3-8	Malfunction of drum motor is detected.
09	TH/UNTH MOTOR	3-8	Malfunction of threading or unthreading operation is detected.
0A	THREADING TROUBLE	3-9	It is detected that the tape top processing is not completed in the threading mode.
10	HUMID	3-9	Dew condensation is detected.
11	TAPE T/E SENSOR	3-10	The tape top and tape end are detected simultaneously.
12	TAPE TOP SENSOR	3-10	Malfunction of tape top sensor is detected.
13	TAPE END SENSOR	3-11	Malfunction of tape end sensor is detected.
14	FAN MOTOR	3-12	Malfunction of cooling fan motor is detected.
20	CASS COMP MOTOR	3-13	Malfunction of cassette compartment-up or down operation is detected.
21	REEL SFT MOTOR	3-13	Malfunction of movement of the reel table corresponding to the cassette size is detected.
22	REEL POS SENSOR	3-14	The L-cassette and S-cassette positions of the reel table are detected simultaneously.
23	THREAD RING SENS	3-14	The thread end and unthread end states of the threading ring are detected simultaneously.
90	NO COMMUNICATION	3-15	Abnormality is detected in the communication with control panel (KY-364 board).
91	SYSTEM REFERENCE	3-15	Abnormality is detected in a system reference signal (VD).
92	INTERNAL I/F	*	Abnormality is detected in the interface between SS-63 board and other boards.
93	CPU INITIALIZE	*	Abnormality is detected during the servo system initialization at turn on the power state.
96	SY NVRAM	*	The abnormal operation of an NV-RAM (Non-volatile RAM) (on the SS-63 board) in system control system is detected.
97	SV NVRAM	*	The abnormal operation of an NV-RAM (MS-50 board) in servo system is detected.
98	RF NVRAM	*	The abnormal operation of an NV-RAM (EQ-56 board) in RF system is detected.

\* : Be not described.

---

**ERROR-01 REEL TROUBLE-1**

Description:	Tape slacking was detected during threading or unthreading.
Detection conditions:	<ol style="list-style-type: none"><li>1) When no take-up reel FG can be detected in the unthread operation just after activation</li><li>2) When the relation between the take-up reel FG and threading FG is out of the specification in operations other than unthread just after activation</li></ol>
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"><li>• Cassette compartment trouble or installation defect<ul style="list-style-type: none"><li>* The reel did not rotate because the cassette was lifted-up from the specified position.</li></ul></li><li>• Clearance adjustment defect of take-up reel FG detection block</li><li>• Take-up reel FG waveform shaper circuit (MS-50 board) trouble</li><li>• Take-up reel motor trouble</li><li>• Take-up reel motor drive circuit (DR-315 board) trouble</li><li>• Take-up reel brake trouble</li><li>• Take-up reel brake solenoid drive circuit (MS-50 board) trouble</li><li>• Servo adjustment defect on take-up reel</li><li>• Harness disconnection</li><li>• Take-up reel table height adjustment defect</li></ul>
Protection operation:	<p>Enters the protection mode.</p> <div><b>CAUTION</b></div> <p>Be sure to take out the cassette manually (refer to section 2-12). Never turn the power on again without taking out the cassette. This may damage the tape.</p>

---

## ERROR-02 REEL TROUBLE-2

Description:	Tape slacking was detected in SEARCH, FF, or REW mode.
Detection conditions:	<ol style="list-style-type: none"> <li>1) When the take-up value is lower than the specified value with respect to the tape supply value</li> <li>2) When the relation between the capstan FG, supply reel FG, and take-up reel FG are out of the specification</li> <li>3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds</li> </ol>
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"> <li>• Cassette compartment trouble or installation defect <ul style="list-style-type: none"> <li>* The reel did not rotate because the cassette was lifted-up from the specified position.</li> </ul> </li> <li>• Clearance adjustment defect of supply or take-up reel FG detection block</li> <li>• Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble</li> <li>• Supply or take-up reel motor trouble</li> <li>• Supply or take-up reel motor drive circuit (DR-315 board) trouble</li> <li>• Capstan motor trouble</li> <li>• Capstan motor drive circuit (DR-315 board) trouble</li> <li>• Capstan FG waveform shaper circuit (MS-50 board) trouble</li> <li>• Take-up torque insufficiency during REW due to supply tension sensor or supply tension detect circuit (MS-50 board) trouble</li> <li>• Servo adjustment defect on capstan, reel(s), and supply tension sensor</li> <li>• Supply or take-up reel brake trouble</li> <li>• Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble</li> <li>• Harness disconnection</li> <li>• Reel table height adjustment defect</li> <li>• Tape path and drum troubles</li> <li>• Tape abnormality (The winding state has a problem.)</li> </ul>
Protection operation:	<p>Enters the protection mode. The normal state may be returned after the protection mode is entered at the end of the tape.</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>CAUTION</b></div> <p>Be sure to take out the cassette manually (refer to section 2-12). Never turn on the power again without taking out the cassette. This may damage the tape.</p>

---

**ERROR-03 REEL TROUBLE-3**

Description: Tape slacking, tape breaking, or supply or take-up reel locking was detected in the REC or PLAY mode.

Detection conditions:

- 1) When the take-up value is lower than the specified value with respect to the tape supply value
- 2) When the relation between the capstan FG, supply reel FG, and take-up reel FG are out of the specification
- 3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds
- 4) When the tension value calculated from the supply tension sensor output is less than 15 g continuously for more than three seconds

Sub error message: None

Possible cause:

- Cassette compartment trouble or installation defect
  - \* The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of supply or take-up reel FG detection block
- Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble
- Supply or take-up reel motor trouble
- Supply or take-up reel motor drive circuit (DR-315 board) trouble
- Capstan motor trouble
- Capstan motor drive circuit (DR-315 board) trouble
- Capstan FG waveform shaper circuit (MS-50 board) trouble
- Servo adjustment defect on capstan, reel(s), and supply tension sensor
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protection operation: Enters the protection mode.

**CAUTION**

Be sure to take out the cassette manually (refer to section 2-12). Never turn on the power again without taking out the cassette. This may damage the tape.

---

## ERROR-04 REEL TROUBLE-4

Description:	Abnormal tape transport speed was detected in the FF or REW mode.
Detection conditions:	When the tape speed calculated from the supply reel FG and take-up reel FG is under a half of the specified tape speed continuously for more than four seconds
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"> <li>• Cassette compartment trouble or installation defect <ul style="list-style-type: none"> <li>* The reel did not rotate because the cassette was lifted-up from the specified position.</li> </ul> </li> <li>• Clearance adjustment defect of supply or take-up reel FG detection block</li> <li>• Supply or take-up reel motor trouble</li> <li>• Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble</li> <li>• Supply or take-up reel motor drive circuit (DR-315 board) trouble</li> <li>• Servo adjustment defect on supply or take-up reel</li> <li>• Supply or take-up reel brake trouble</li> <li>• Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble</li> <li>• Harness disconnection</li> <li>• Reel table height adjustment defect</li> <li>• Tape path and drum troubles</li> <li>• Tape abnormality (The winding state has a problem.)</li> </ul>
Protection operation:	Stops the tape transport and enters the rest state.

---

## ERROR-05 REEL TROUBLE-5

Description:	Abnormal supply reel or take-up reel operation was detected in a diagnosis during cassette insertion.
Detection conditions:	<ol style="list-style-type: none"> <li>1) When the supply reel FG or take-up reel FG count is less than the specified value with the reel rotated</li> <li>2) When the supply reel FG or take-up reel FG count is more than the specified value with the reel stopped</li> </ol>
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"> <li>• Supply or take-up reel FG sensor (SE-344 board) trouble or clearance adjustment defect</li> <li>• Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble</li> <li>• Supply or take-up reel motor drive circuit (DR-315 board) trouble</li> <li>• Servo adjustment defect on supply or take-up reel</li> <li>• Supply or take-up reel brake trouble</li> <li>• Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble</li> <li>• Harness disconnection</li> </ul>
Protection operation:	Ejects the cassette.

---

**ERROR-06 TAPE TENSION ERROR**

Description:	Excessive tension was detected in the REC or PLAY mode.
Detection conditions:	When the tension value calculated from supply tension sensor output is more than 55 g continuously for more than three seconds
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"><li>• Cassette compartment trouble or installation defect<ul style="list-style-type: none"><li>* The reel did not rotate because the cassette was lifted-up from the specified position.</li></ul></li><li>• Supply tension sensor or its related circuit (MS-50 board) trouble</li><li>• Supply reel motor trouble</li><li>• Supply reel motor drive circuit (DR-315 board) trouble</li><li>• Servo adjustment defect on supply reel and supply tension sensor</li><li>• Supply reel brake trouble</li><li>• Supply reel brake solenoid drive circuit (MS-50 board) trouble</li><li>• Harness disconnection</li></ul>
Protection operation:	Stops the tape transport and enters the rest state.

---

**ERROR-07 CAPSTAN TROUBLE**

Description:	Malfunction of capstan motor was detected.
Detection conditions:	<ol style="list-style-type: none"><li>1) When the capstan FG count is less than the specified value in a diagnosis during cassette insertion</li><li>2) When the frequency calculated from the capstan FG is out of the specification in the REC, PLAY, or SEARCH mode</li><li>3) When CAPSTAN FG(A) NOR signal and CAPSTAN FG(B) NOR signal interrupts are not normal for about 40 ms in the REC or PLAY mode</li></ol>
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"><li>• Capstan motor trouble</li><li>• FG sensor trouble in capstan motor</li><li>• Capstan motor drive circuit (DR-315 board) trouble</li><li>• Capstan motor FG waveform shaper circuit (MS-50 board) trouble</li><li>• Capstan FG duty adjustment defect</li></ul>
Protection operation:	Ejects the cassette for No. 1 in detection conditions. Stops the tape transport and enters the rest state for No. 2 and No. 3 in detection conditions.

---

## ERROR-08 DRUM MOTOR TROUBLE

Description:	Malfunction of drum motor was detected.
Detection conditions:	When the drum FG cycle is shifted more than about $\pm 30\%$ continuously for more than 10 seconds as compared with during normal rotation
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"> <li>• Drum motor trouble</li> <li>• Drum microcomputer (IC314 on SS-63 board) trouble</li> <li>• Drum motor drive circuit (DR-315 board) trouble</li> <li>• Drum FG/PG waveform shaper circuit (DR-315 board) trouble</li> <li>• Assembly defect during upper drum replacement</li> </ul>
Protection operation:	Stops the tape transport and enters the rest state in the unthread end state.

---

## ERROR-09 TH/UNTH MOTOR LOCK

Description:	Malfunction of threading or unthreading operation was detected.
Detection conditions:	<ol style="list-style-type: none"> <li>1) When no operation is completed within about six seconds after operation start</li> <li>2) When no threading FG is output within about 0.4 second during threading motor drive</li> <li>3) When states other than unthread end are continued for more than six seconds in case that the unit should be in the unthread end state</li> </ol>
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"> <li>• Unthread end sensor (TR-79 board) trouble</li> <li>• Thread end sensor (TR-79 board) trouble</li> <li>• Thread end/unthread end input port (IC1 on MS-50 board) trouble</li> <li>• Threading motor trouble</li> <li>• Threading FG sensor (PTC-54 board) trouble</li> <li>• Threading FG waveform shaper circuit (MS-50 board) trouble</li> <li>• Threading motor drive circuit (DR-315 board) trouble</li> <li>• Threading mechanism trouble</li> </ul>
Protection operation:	<p>Ejects the cassette during cassette insertion or ejection.</p> <p>Enters the protection mode during tape threading/unthreading.</p> <p>Stops the tape transport and enters the rest state in cases except the above.</p>



---

**ERROR-0A THREADING TROUBLE**

Description: It was detected that the tape top processing in the thread state is not completed.

Detection conditions: When the tape top is detected again after it is processed

**Tape top processing**

In this processing, the tape is slightly forwarded without taking out the tape after unthread because the tape top was detected during threading.

(Short FF)

Sub error message: None

Possible cause:

- Take-up reel motor trouble
- Servo adjustment defect on take-up reel
- Take-up reel motor drive circuit (DR-315 board) trouble
- Tape top sensor trouble
- Tape top detection circuit (MS-50 board) trouble
- Tape top input port (IC115 on SS-63 board) trouble
- Tape abnormality

Protection operation: Enters the rest state in the unthread end state.

---

**ERROR-10 HUMID**

Description: Dew was detected.

Detection conditions: When the condensation sensor detects dew condensation continuously for about two seconds

Sub error message: None

Possible cause:

- Actual dew detection (When the operating environment rapidly changes from low temperature to high temperature and high humidity)
- Condensation sensor trouble
- Dew input port (IC1 on MS-50 board) trouble

Protection operation: Prohibits the cleaning roller operation.  
 Stops the tape transport and enters the rest state in the unthread end state when the tape is threaded in states other than REC or PLAY.  
 Prohibits the tape threading.  
 Prohibits the cassette insertion.

---

## **ERROR-11 TAPE TOP/END SENSOR TROUBLE**

Description:	The tape top and tape end were detected simultaneously.
Detection conditions:	When the simultaneous detection of the tape end and tape top is continued for more than seven seconds
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"> <li>• Tape top sensor or tape end sensor trouble</li> <li>• Tape top or tape end detection circuit (MS-50 board) trouble</li> <li>• Tape top/tape end input port (IC115 on SS-63 board) trouble</li> <li>• Harness disconnection</li> </ul>
Protection operation:	Stops the tape transport and enters the rest state during tape transport.

---

## **ERROR-12 TAPE TOP SENSOR TROUBLE**

Description:	Malfunction of tape top sensor was detected.
Detection conditions:	When the tape top is detected continuously for more than seven seconds
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"> <li>• Tape top sensor trouble</li> <li>• Tape top detection circuit (MS-50 board) trouble</li> <li>• Tape top input port (IC115 on SS-63 board) trouble</li> <li>• Harness disconnection</li> <li>• The tape cannot move at the tape top due to troubles other than the tape sensor.</li> </ul>
Protection operation:	<p>In the FF mode, continues the operation until the tape end is detected. Stops the tape transport and enters the rest state when the tape end is detected.</p> <p>During tape transport in forward direction, the FF mode can be entered only while the total tape quantity is observed.</p> <p>Stops the tape transport and enters the rest state during tape transport except the above.</p>

---

**ERROR-13 TAPE END SENSOR TROUBLE**

Description:	Malfunction of tape end sensor was detected.
Detection conditions:	When the tape end is detected continuously for more than seven seconds
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"><li>• Tape end sensor trouble</li><li>• Tape end detection circuit (MS-50 board) trouble</li><li>• Tape end input port (IC115 on SS-63 board) trouble</li><li>• Harness disconnection</li><li>• The tape cannot move at the tape end due to troubles other than the tape sensor.</li></ul>
Protection operation:	<p>In the REW mode, continues the operation until the tape top is detected. Stops the tape transport and enters the rest state when the tape top is detected.</p> <p>During the tape transport in reverse direction, the REW mode can be entered only while the total tape quantity is observed.</p> <p>Stops the tape transport and enters the rest state during tape transport except the above.</p>

## ERROR-14 FAN MOTOR TROUBLE

Description: Malfunction of cooling fan motor was detected.

### CAUTION

If this error occurred, stop immediately operation of the unit, and turn off the power.

If a fan stops and the unit continue use, overheating inside the unit can cause a fire or a failure.

Detection conditions: When the fan motor FG frequency is less than the specified value continuously for more than one second

Sub error message: None

Possible cause:

- Fan motor trouble
- Fan motor FG input port (IC115 or IC500 on SS-63 board) trouble
- Fan motor control port (IC500 on SS-63 board) trouble
- Fan motor power switch circuit (MB-648 board) trouble

Protection operation: None

### Note

This unit has four fan motors.

When the above detection conditions is satisfied by any fan motor, this error occurs.

Relations of fan motors and operation state, ports, power switch circuit are as follows.

Use	Operation sate	FG input port	Control port	Power switch circuit
For rear	Always rotating	IC500/SS-63 board	None	None
For HDD units	Pauses at under +5°C	IC500/SS-63 board	IC500/SS-63 board	Q4 and Q5/MB-648 board
For mechanical deck	Always rotating	IC115/SS-63 board	IC500/SS-63 board	Q1 and Q2/MB-648 board
For power supply unit	Always rotating	IC115/SS-63 board	None	None

---

**ERROR-20 CASSETTE COMPARTMENT MOTOR LOCK**

Description:	Malfunction of cassette compartment-up or down operation was detected.
Detection conditions:	When no operation is completed with in about six seconds after operation start
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"> <li>• Cassette compartment block trouble</li> <li>• Cassette compartment motor drive circuit (DR-315 board) trouble</li> <li>• Cassette-down sensor (CL-29 board) trouble</li> <li>• Cassette-down input port (IC1 on MS-50 board) trouble</li> </ul>
Protection operation:	Stops the movement of the cassette compartment and reel table until a cassette eject button is pushed.

---

**ERROR-21 REEL SHIFT MOTOR LOCK**

Description:	Malfunction of movement of the reel table corresponding to the cassette size was detected.
Detection conditions:	When no operation is completed with in about six seconds after operation start
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"> <li>• Reel shift mechanism trouble</li> <li>• Reel shift motor trouble</li> <li>• Reel shift motor drive circuit (DR-315 board) trouble</li> <li>• Reel position sensor (PTC-71 board) trouble (S position sensor or L position sensor)</li> <li>• Reel position input port (IC1 on MS-50 board) trouble</li> </ul>
Protection operation:	Stops the movement of the reel table and ejects the cassette during cassette loading.

---

**ERROR-22 REEL POSITION SENSOR TROUBLE**

Description:	The L and S cassette positions of the reel table were detected simultaneously.
Detection conditions:	When the L and S position sensors detect the L and S cassette positions, respectively at the same time
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"><li>• S position sensor (PTC-71 board) trouble</li><li>• L position sensor (PTC-71 board) trouble</li><li>• Reel position input port (IC1 on MS-50 board) trouble</li></ul>
Protection operation:	Ejects the cassette if possible when an error occurs during cassette insertion. Prohibits the cassette insertion.

---

**ERROR-23 TH/UNTH END SENSOR TROUBLE**

Description:	The thread end and unthread end states were detected simultaneously.
Detection conditions:	When the thread end and unthread end sensors detect the thread end and unthread end states, respectively at the same time
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"><li>• Thread end sensor (TR-79 board) trouble</li><li>• Unthread end sensor (TR-79 board) trouble</li><li>• Thread/unthread end input port (IC1 on MS-50 board) trouble</li></ul>
Protection operation:	Ejects the cassette during cassette insertion or ejection. Enters the protection mode during tape threading/unthreading. Stops the tape transport and enters the rest state in cases except the above.

---

**ERROR-90 KEYBOARD INTERFACE ERROR**
**Note**

This error message is displayed in the time data display area, but error code is not displayed. The error message is not superimposed to the video monitor, and ALARM indicator does not light.

Description:	The communication between the lower control panel (KY-364 board) and SIO (IC1102 on SS-63 board) is not normal.
Detection conditions:	The microcomputer (IC104 on KY-346 board) on lower control panel cannot receive transmit signal from SIO
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"> <li>• Cable connection defect or disconnection</li> <li>• Line receiver/transceiver (IC102 on KY-364 board) trouble</li> <li>• SIO (IC1102 on SS-63 board) trouble</li> </ul>
Protection operation:	None

---

**ERROR-91 SYSTEM REFERENCE NOT EXIST**

Description:	Abnormality was detected in the system reference signal (VD).
Detection conditions:	When the VD signal is not input to IC1903 on SS-63 board in a system control system for more than a fixed time period
Sub error message:	None
Possible cause:	<ul style="list-style-type: none"> <li>• Servo IC (IC313 on SS-63 board) trouble</li> <li>• Servo CPU (IC103 on SS-63 board) trouble</li> </ul>
Protection operation:	<p>Enters the protection mode when abnormality is detected by the servo system (Servo CPU).</p> <p>Displays only this error when abnormality is detected by only the system control system.</p>





## Section 5

### Periodic Maintenance and Inspection

This section explains about periodic maintenance and how to cleaning.

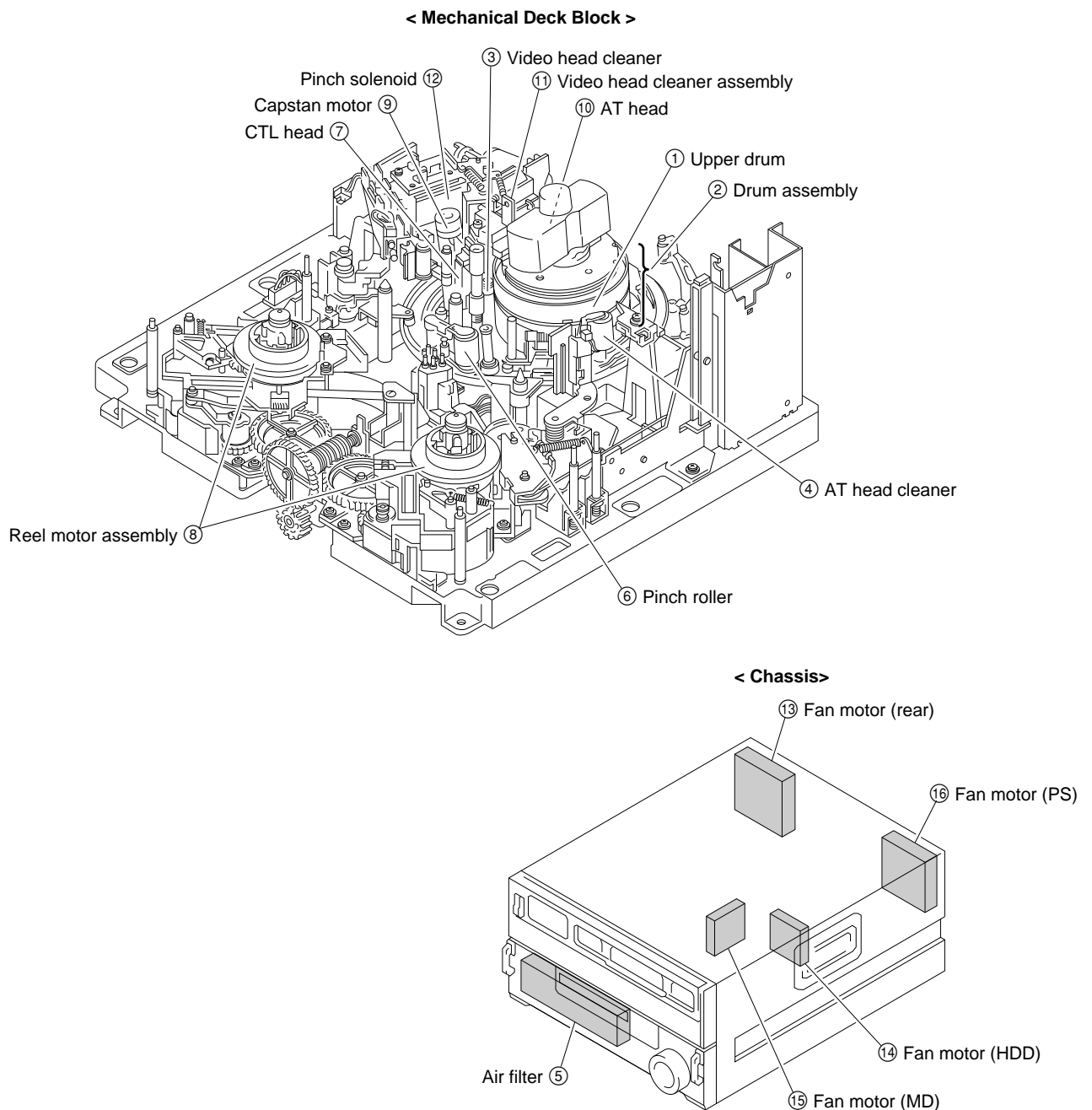
#### 5-1. Periodic Maintenance

To make the most of the functions, fully realize the performances of this unit and to lengthen the life of the unit, periodic check and parts replacement are recommended.

##### 5-1-1. Index

It is necessary to check and replace periodically following parts.

The numbers in the illustration correspond to the table in the next page.



## 5-1-2. Periodic Replacement and Check Item List

The replacement time shown in the following list is not the guarantee term of parts.

The replacement time of parts varies depending on the operating environment and conditions of the unit.

Especially, the pinch roller, cleaners and air filter may be required replacing earlier than replacement period shown in table depending on the extent of their dirt or abrasion.

No.	Replacement parts	Replacement period	Part No.	Name	Q'ty	Note
1	Upper drum	Every 2,000 hours of drum rotating	A-8277-421-A	Upper drum DJR-13A-R	1	DNW-A100/A100P
			A-8277-915-A	Upper drum DJR-16A-R	1	DNW-A50/A45/A50P/A45P
2	Drum assembly *1	Every 6,000 hours of drum rotating	A-8277-425-A	Drum DJH-13A-R	1	DNW-A100/A100P
			A-8277-914-A	Drum DJH-16A-R	1	DNW-A50/A45/A50P/A45P
3	Video head cleaner	Every 2,000 hours of drum rotating	X-3167-281-3	Roller assy, V cleaning	1	Check every 1,000 hours
			3-182-765-02	CR spacer	1	
4	AT head cleaner	Every 2,000 hours of drum rotation	X-3167-053-2	Arm assy, CL	1	Check every 1,000 hours
5	Air filter	Every 6,000 hours of air filter use	3-603-810-01	Filter	1	
6	Pinch roller	Every 2,000 hours of tape running	X-3167-054-3	Arm assy, pinch	1	Check every 1,000 hours
7	CTL head	Every 4,000 hours of tape running	8-825-554-83	CTL head (PS244-21B)	1	
8	Reel motor	Every 4,000 hours of tape running	A-8267-774-C	RM assy	2	
9	Capstan motor	Every 6,000 hours of tape running	1-698-179-12	Motor, DC (capstan)	1	
10	AT head	Every 6,000 hours of tape running	8-825-778-21	Audio head (EPS244-2103G)	1	Check every 3,000 hours
11	Video head cleaner assembly *2	Ealier time either 6,000 hours of drum rotating or 200,000 times of threading	A-8267-398-J	Video head cleaner assembly	1	
12	Pinch solenoid	Ealier time either 6,000 hours of tape running or 200,000 times of threading	1-454-338-00	Solenoid, plunger	1	
13	Fan motor (rear)	Every 40,000 hours of energized	1-698-939-11	Fan, DC (92 square)	1	
14	Fan motor (HDD)	Every 40,000 hours of energized	1-698-786-11	Fan, DC (60 square)	1	
15	Fan motor (MD)	Every 40,000 hours of energized	1-698-857-11	Fan, DC (60 square)	1	
16	Fan motor (PS)	Every 40,000 hours of energized	1-698-812-11	Fan, DC (80 square)	1	

\*1 Drum assembly includes an upper drum and a brush slip ring.

\*2 Video head cleaner assembly includes a video head cleaer.

Replacement the parts shown in the table below periodically when the threading/unthreading operation is repeated frequently.

Replacement parts	Replacement period	Part No.	Name	Q'ty
Brake solenoid	Every 200,000 times of threading	1-454-417-31	Solenoid, Plunger	1
S tension regulator	Every 200,000 times of threading	A-8267-795-D	Tension regulator assy (RP)	1
T tension regulator	Every 200,000 times of threading	A-8267-423-B	T tension regulator assy	1
T drawing arm	Every 200,000 times of threading	A-8278-313-A	Drawer assy (T)	1
Gear box assembly	Every 200,000 times of threading	A-8267-424-A	Box assembly, Gear	1
Threading ring assembly	Every 200,000 times of threading	A-8267-395-E	Ring assembly, Threading	1
Ring roller	Every 200,000 times of threading	3-180-677-01	Roller, Ring	2
		3-180-679-01	Roller (B), Ring	1
Pinch arm guard	Every 200,000 times of threading	3-180-853-01	Guard, Pinch arm	1
CL guide rail	Every 200,000 times of threading	3-180-874-02	Rail, CL guide	1
Cassette compartment assembly	Every 200,000 times of threading	A-8267-589-D	Cassette compartment (RP)	1
Video head cleaner	Every 1,000 hours of drum rotating	X-3167-281-3	Roller assy V cleaning	1
		3-182-765-02	CR spacer	1
AT head cleaner	Every 1,000 hours of drum rotating	X-3167-053-2	Arm assy, CL	1
Pinch roller	Every 1,000 hours of drum rotating	X-3167-054-3	Arm assy, Pinch	1

### 5-1-3. Hours Meter

This unit can display an hours meter on the time counter of the lower control panel. Perform a periodic check with this hours meter as a reference.

#### 1. Contents of display

Menu No.	Display	Contents
H01	OPERATION HOURS	Sum of energized time
H02	DRUM RUNNING HOURS	Sum of drum rotating time
H03	TAPE RUNNING HOURS	Sum of tape running time
H04	THREADING COUNTER	Sum of threading
H12	DRUM RUNNING HOURS	Sum of drum rotating time (Resettable)
H13	TAPE RUNNING HOURS	Sum of tape running time (Resettable)
H14	THREADING COUNTER	Sum of threading (Resettable)
H15	AIR FILTER HOURS	Sum of air filter use time (Resettable)

#### 2. Display procedures

- (1) Press the MENU button of the lower control panel.
- (2) Put the “\*” to the desired ITEM by turning the JOG dial.
- (3) Press the SET button of the lower control panel to display the hours meter.
- (4) Press the MENU button once and repeat from steps (2) to display other ITEM.  
Press the MENU button twice to exit the MENU.

## 5-2. Cleaning

To make the most of the functions, fully realize the performance of this unit, and to lengthen the life of the unit and tape, clean the components often.

### 5-2-1. Cleaning by Cleaning Tape

If the video heads are clogged, clean the video head as the following procedure. Make sure to use the specified cleaning tape. If other tape is used, unusual abrasion or damage of the video heads may occur.

Specified cleaning tape: BCT-5CLN

#### Procedure

1. Insert the Cleaning tape BCT-5CLN to the unit.
  2. Press the EJECT and PLAY buttons simultaneously.  
The cleaning tape is played back for approx. 5 seconds. After that, the cleaning tape will be ejected automatically.
- Notes**
- If the cleaning tape is not ejected after playing back more than 5 seconds, be sure to press the EJECT button immediately and eject the cleaning tape.
  - Do not place the cleaning tape in the STOP mode, and do not put the unit in fast-forward and rewind mode, because the video heads may be damaged.
3. Confirm that the head clogging is clear.

If the video heads are clogged after cleaning by cleaning tape, clean them by cleaning cloth. (Refer to Section 5-2-3.)

### 5-2-2. General Information for Cleaning by Cleaning Cloth

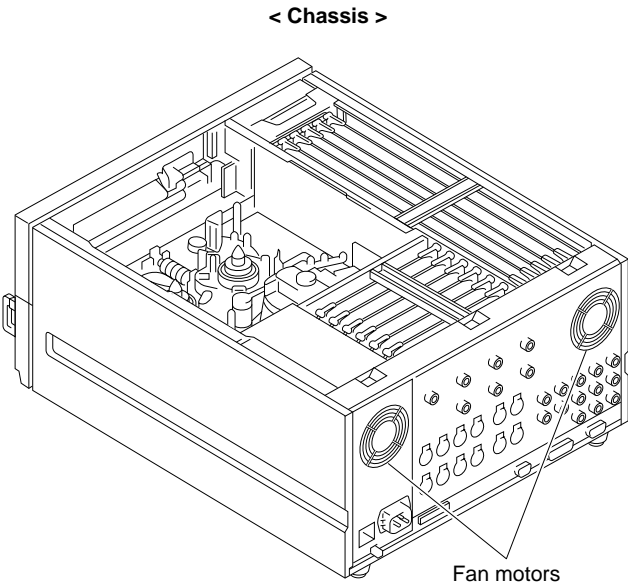
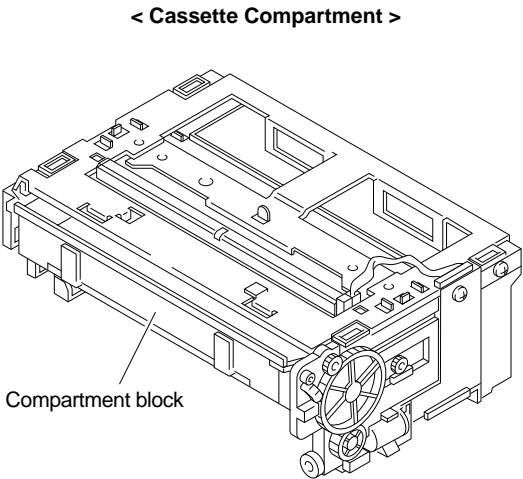
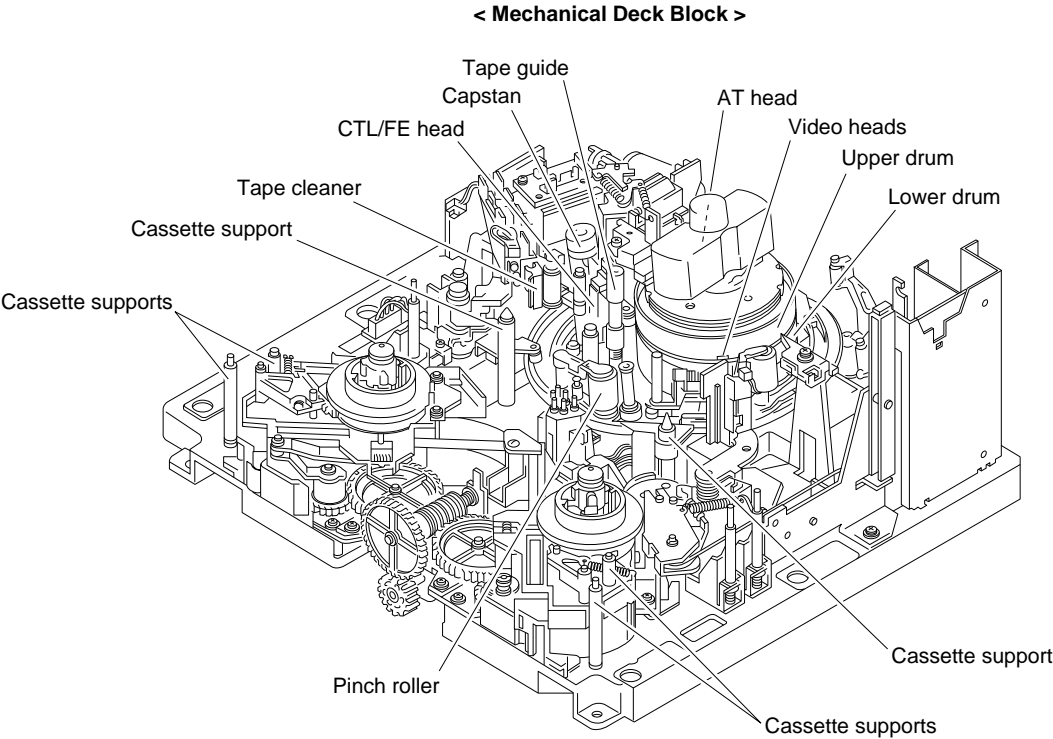
#### 1. Cautions

- Be sure turn the power off before cleaning.
- Each block in the mechanical deck consists of a precision part and is adjusted precisely. Be careful not to damage each part and to apply an excessive force during cleaning.
- Do not touch the greased portions during cleaning. If grease attaches to cleaning cloth, replace the cleaning cloth by a new one. If a cleaning cloth smeared with grease is used, grease may attach to the places where it should not.
- Do not insert a cassette tape before a cleaning fluid completely evaporates after cleaning.

#### 2. Preparation

- (1) Turn the power off.
- (2) Remove the upper lid. (Refer to Section 2-4-1.)
- (3) Remove the sound insulation plate (MD). (Refer to Section 2-5.)
- (4) Remove the cassette compartment. (Refer to Section 2-6.)

3. Index



### 5-2-3. Tape Running Surface of Upper Drum and Video Heads Cleaning

#### Caution

Never touch the rotating drum.

The rotary heads are the part that can be damaged easily. Be careful not to damage the rotary heads during cleaning.

#### Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

#### Note

Do not use a cotton swab to clean the video heads.

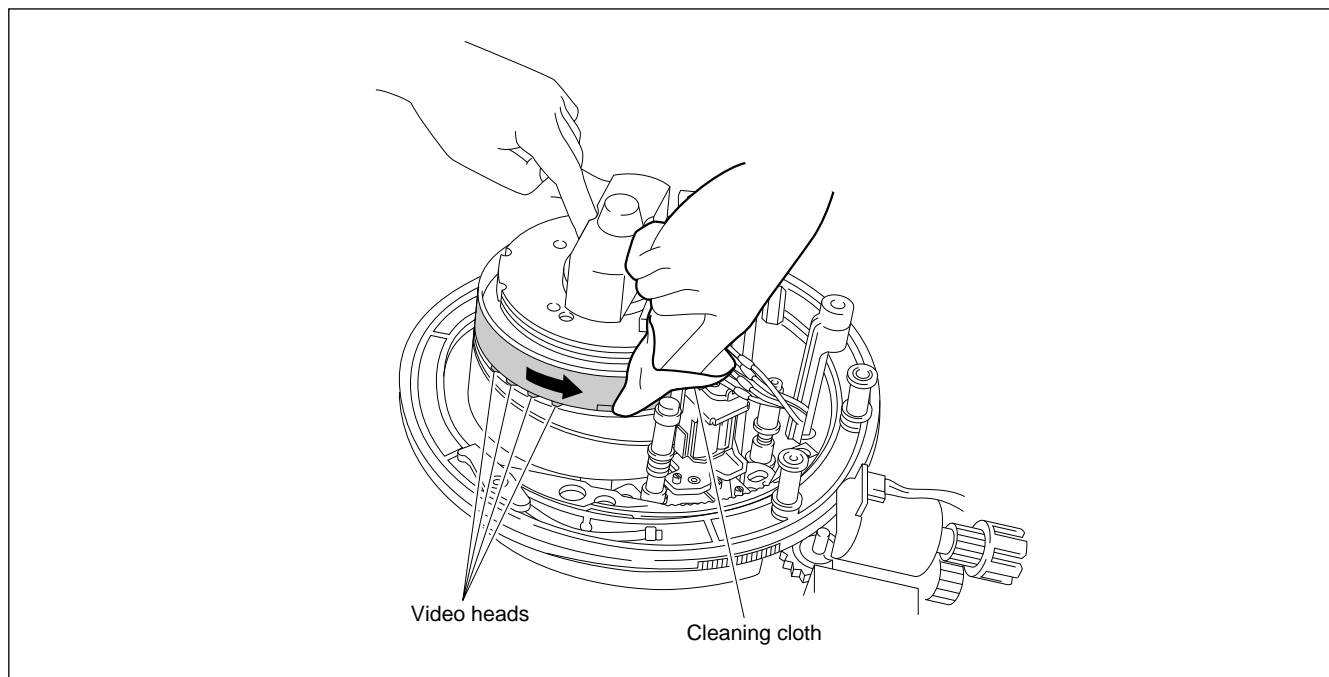
#### Procedures

1. Hold the cleaning cloth moistened with cleaning fluid keeping it from becoming wrinkled. And press the cleaning cloth slightly against the video heads.
2. Rotate the upper drum slowly counterclockwise two or three turns and clean the tape running surface and video heads with the cleaning cloth held.

#### Note

Be sure to rotate the upper drum counterclockwise and clean the video heads along the circumference. Do not rotate the upper drum in the opposite direction (clockwise) or clean it in the vertical direction. This may damage the rotary heads and the brush slip ring assembly.

3. After cleaning, wipe it with a dry cleaning cloth two or three times.



Video Heads Cleaning

### 5-2-4. Tape Running Surface of Lower Drum and Lead Surface Cleaning

#### Caution

Be careful not to damage the lower drum (specially lead surface) during cleaning.  
Pay careful attention when cleaning the edge portion above the lower drum because it is located near the video heads.

#### Tools

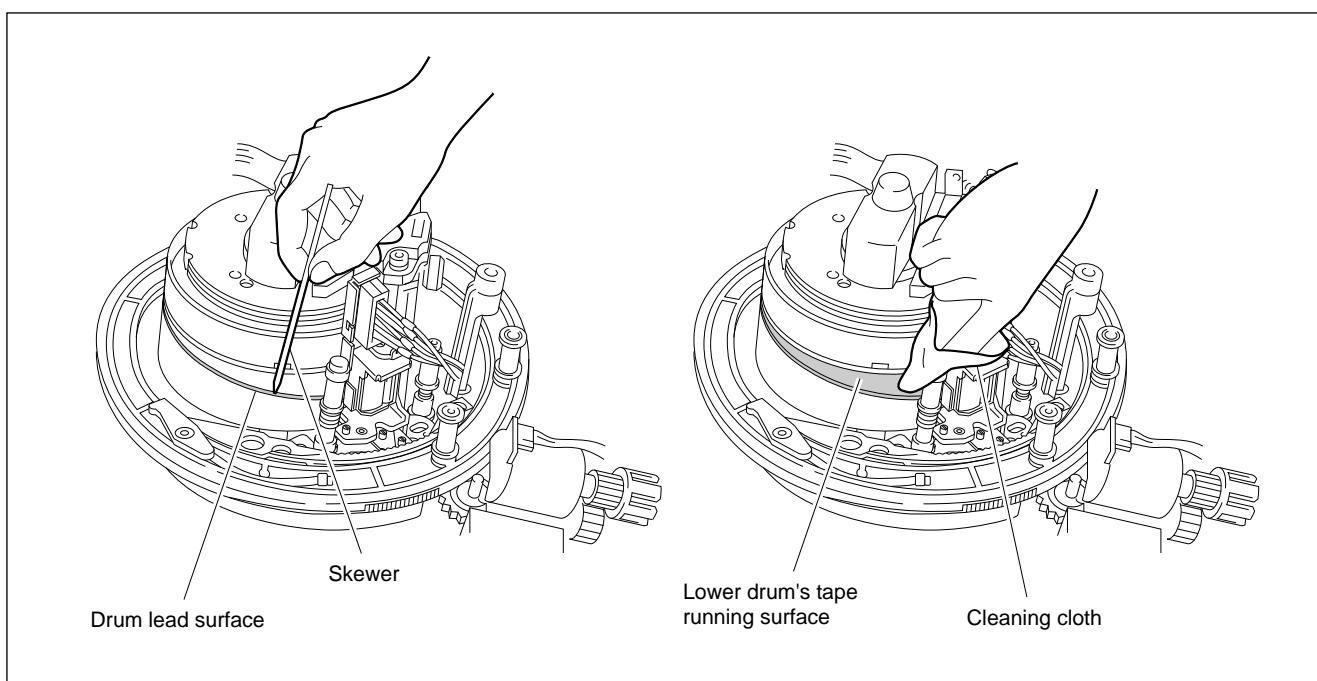
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Skewer or an equivalent (A metallic skewer cannot be used. )

#### Procedures

1. As shown in the figure, put a skewer (or an equivalent) along the drum lead surface and remove the magnetic powder.

#### Notes

1. Do not use a metallic skewer instead of the skewer. This may damage the tape running surface.
2. Tracking may be badly influenced when magnetic powder attaches to the drum lead surface. Remove the magnetic powder completely during cleaning.
2. Clean the drum lead surface and lower drum's tape running surface (shaded portion in the figure) with a cleaning cloth moistened with a cleaning fluid.
3. After cleaning, wipe it with a dry cleaning cloth two or three times.



**Tape Running Surface of Lower Drum and Lead Surface Cleaning**

### 5-2-5. Stationary Heads Cleaning

#### Caution

- Be careful not to damage the head surface when cleaning the stationary heads.

#### Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

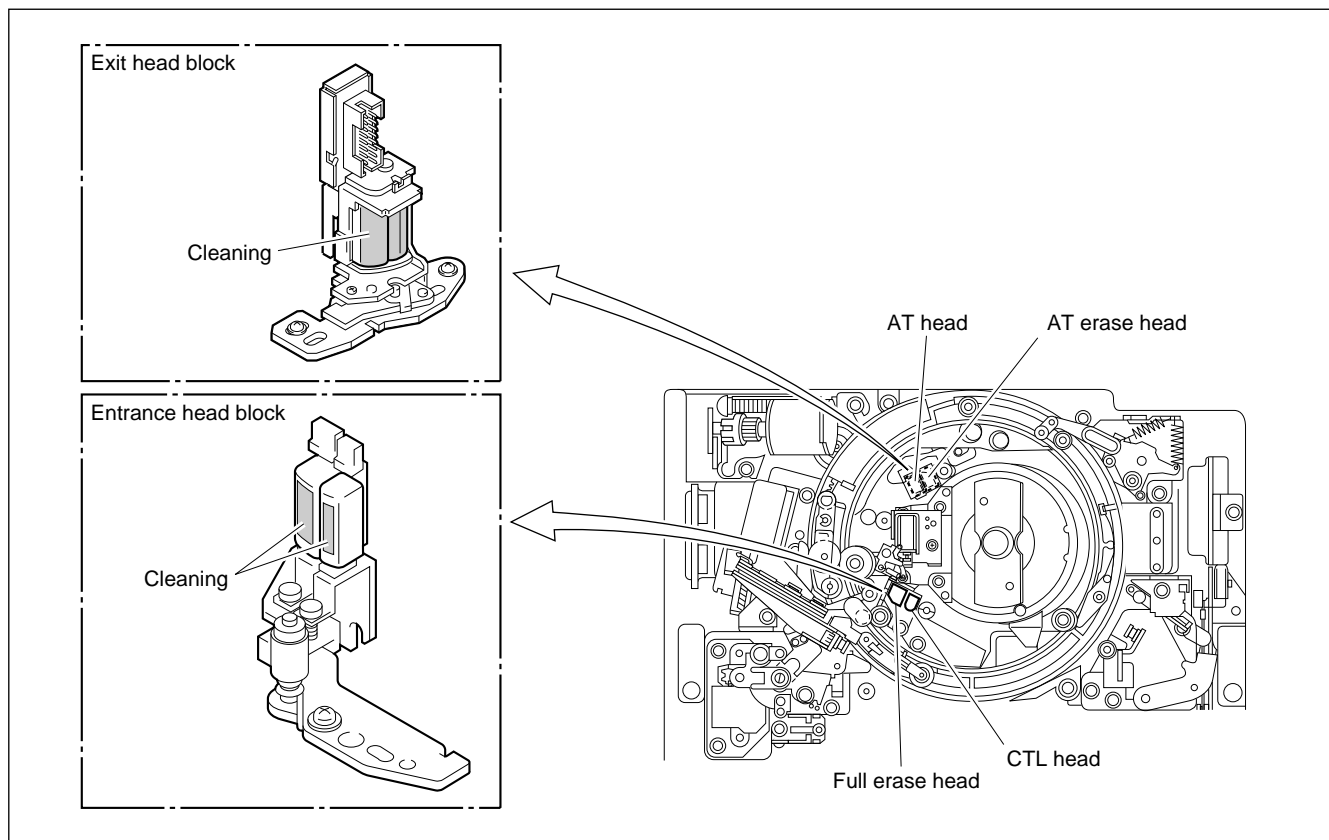
#### Procedures

1. Clean the tape running surfaces of the AT head, CTL head, and full erase head in the vertical direction with a cleaning cloth moistened with a cleaning fluid.

#### Note

An error may occur in the recording or playback when magnetic powder attaches to the head gap portion of the AT head, CTL head, and full erase head. Remove the magnetic powder completely during cleaning.

2. After cleaning, wipe it with a dry cleaning cloth two or three times.



Stationary Heads Cleaning



## 5-2-6. Tape Running System and Tape Cleaner Cleaning

### Warning

The tape cleaner has a sharp edge. Do not touch the edge with bare hands. Pay careful attention when cleaning the tape cleaner.

### Tools

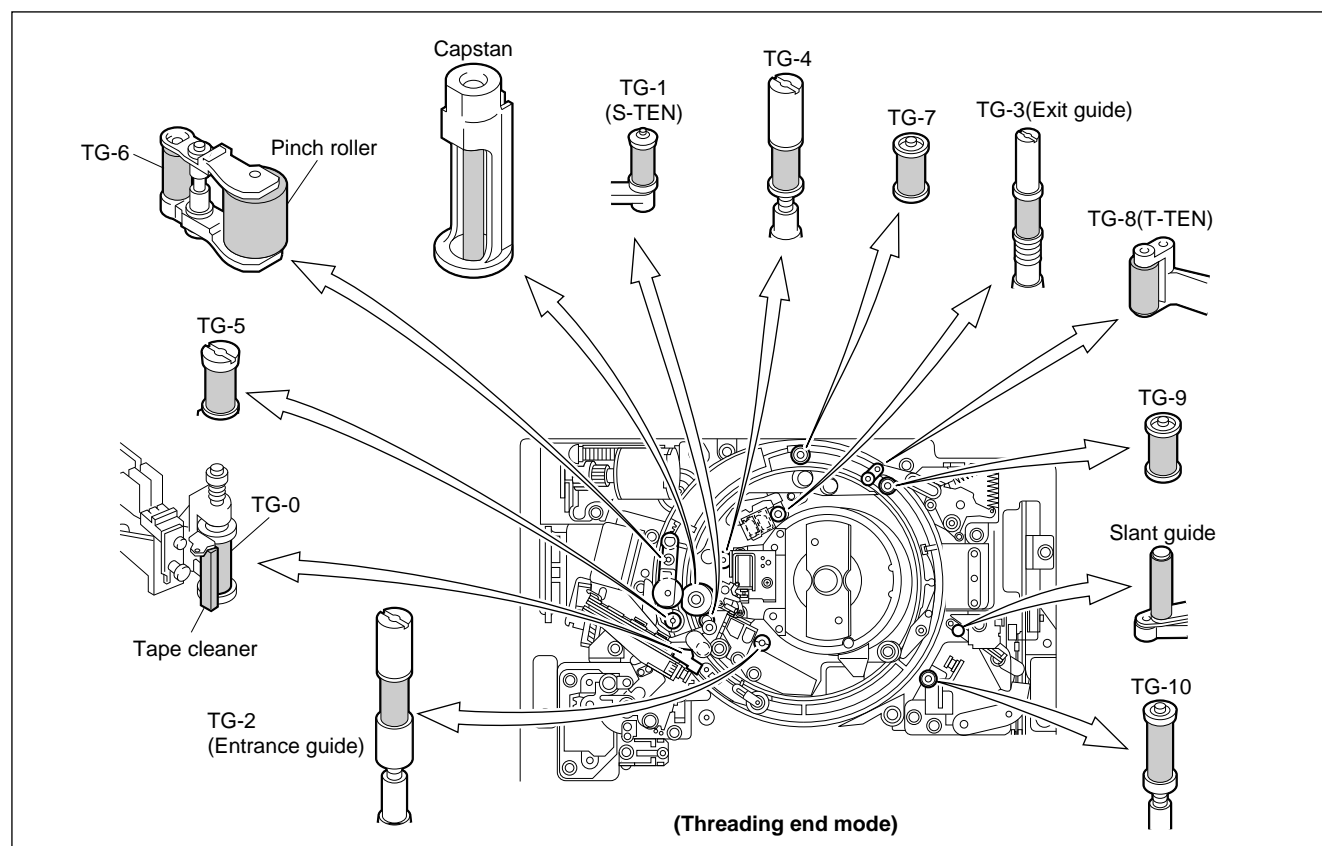
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

### Procedures

1. Trace the surfaces of the tape cleaner using a paper (approximately this manual's paper) to chip the magnetic powder adhering to the tape cleaner.

#### WARNING

- Do not touch the edge portion of the tape cleaner with bare hands.
  - Pay careful not to hurt to the tape cleaner.
2. Clean the tape running surfaces (shaded portions in the figure) of each guide and the tape cleaner with cleaning cloth moistened with a cleaning fluid.
  3. After cleaning, clean it with a dry cleaning cloth two or three times.



Tape Running System and Tape Cleaner Cleaning

### 5-2-7. Fan Motors Cleaning

#### Notice

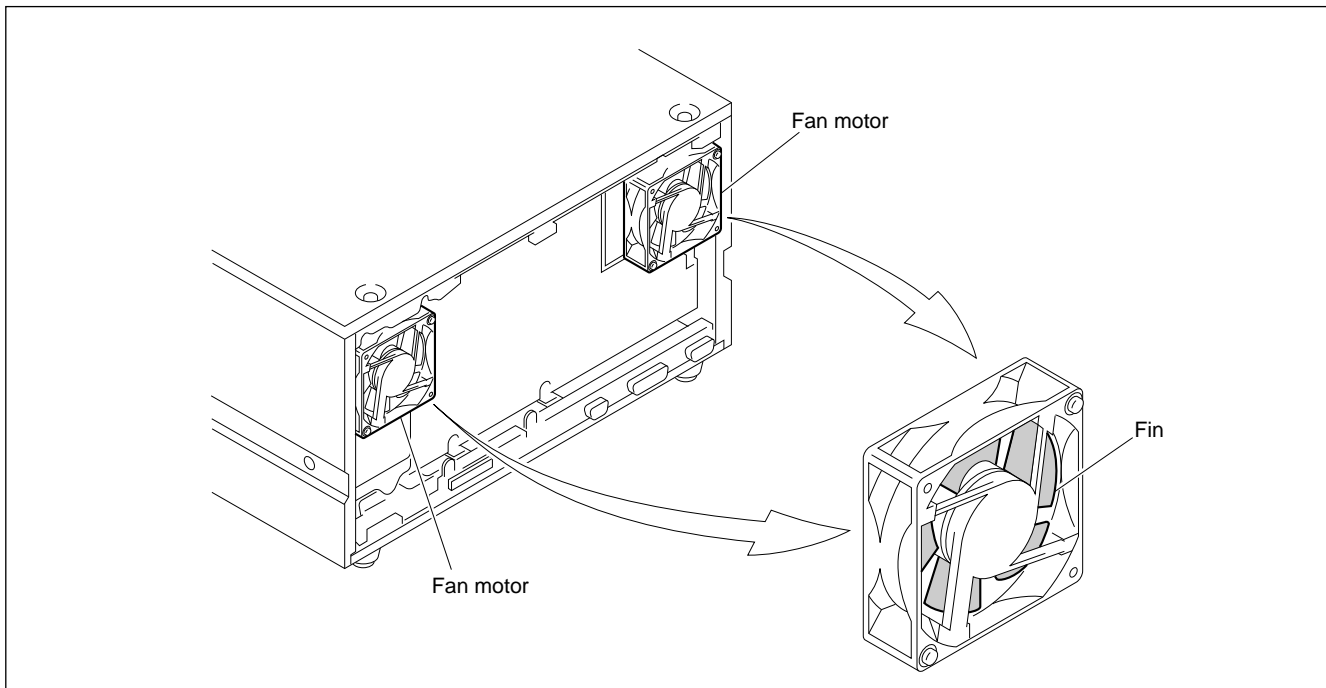
The temperature in the unit increases when dust attaches to the fan motor and when the air flow is disturbed. This may badly influence the performance and life of the unit. Clean the fan motor on the rear panel periodically because it accumulates dust easily.

#### Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Vacuum cleaner

#### Procedures

1. Remove the power panel. (Refer to Section 2-4-4.)  
Disconnection of harness is not necessary.
2. Remove the connector panel. (Refer to Section 2-4-3.)  
Disconnection of harness is not necessary.
3. Remove the dust on the fan motors using a vacuum cleaner.
4. Clean the blades (shaded portion in the figure) with cleaning cloth moistened with cleaning fluid.
5. Install the connector panel. (Refer to Section 2-4-3.)
6. Install the power panel. (Refer to Section 2-4-4.)



Fan Motor Cleaning

## 5-2-8. Cassette Compartment/Cassette Supports Cleaning

### Notes

- Be careful not to apply an excessive force to the compartment or the mirror when cleaning the cassette compartment.
- Do not clean the door and the mirror with alcohol. This may cause a crack.

### Tools

- Cloth (or Gauze)
- Vacuum cleaner

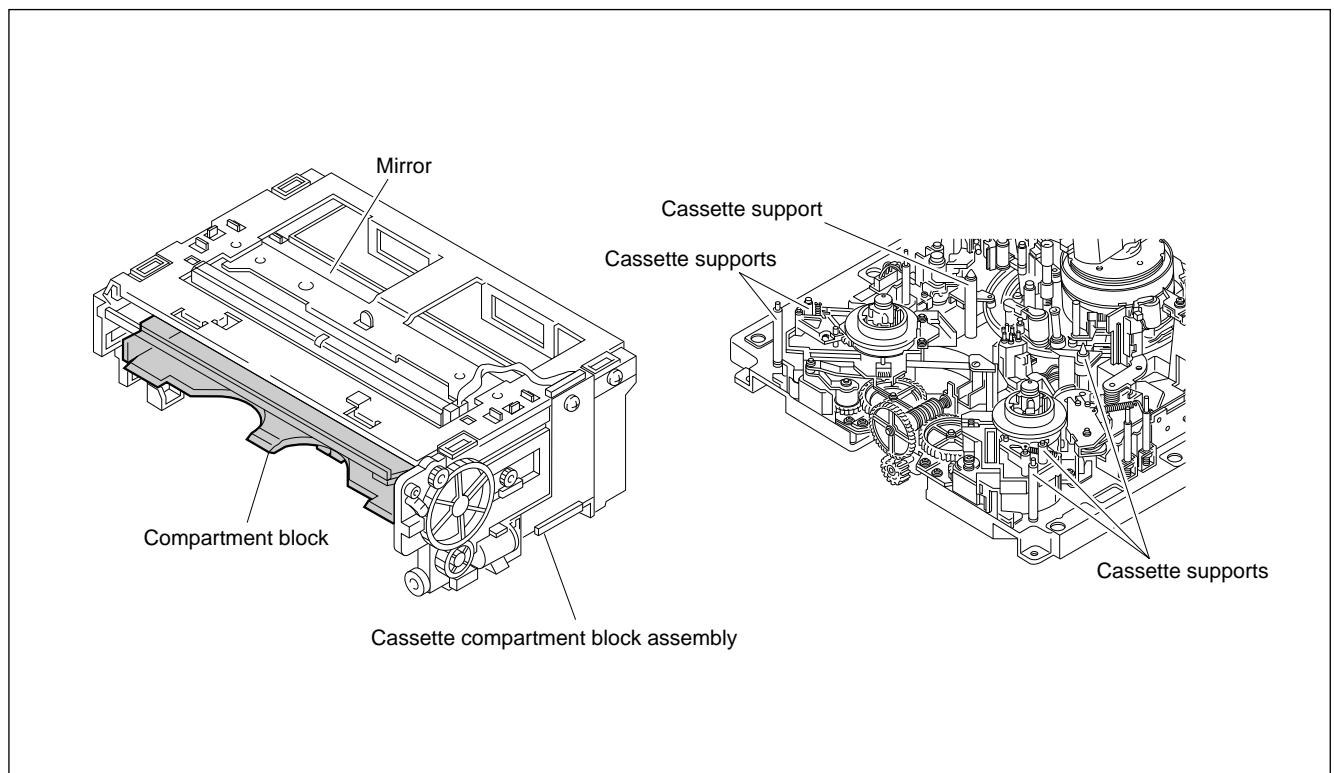
### Procedures

1. Remove the cassette compartment from the unit. (Refer to Section 2-6.)
2. Remove the dust on the cassette compartment from the cassette insertion inlet using a vacuum cleaner.
3. Clean the compartment (shaded portion in the figure) with a dry cloth (or gauze).

#### Note

Do not apply an excessive force to the compartment block.

4. Clean the cassette supports on the mechanical deck with dry cloth (or gauze).



Cassette Compartment Cleaning



## Section 7

### Spare Parts

#### 7-1. Notes on Repair Parts

##### 1. Safety Related Components Warning

Components marked  $\triangle$  are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

##### 2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.

Parts list has the present standardized repair parts.

##### 3. Stock of Parts

Parts marked with “o” at SP (Supply Code) column of the spare parts list may be not stocked. Therefore, the delivery date will be delayed.

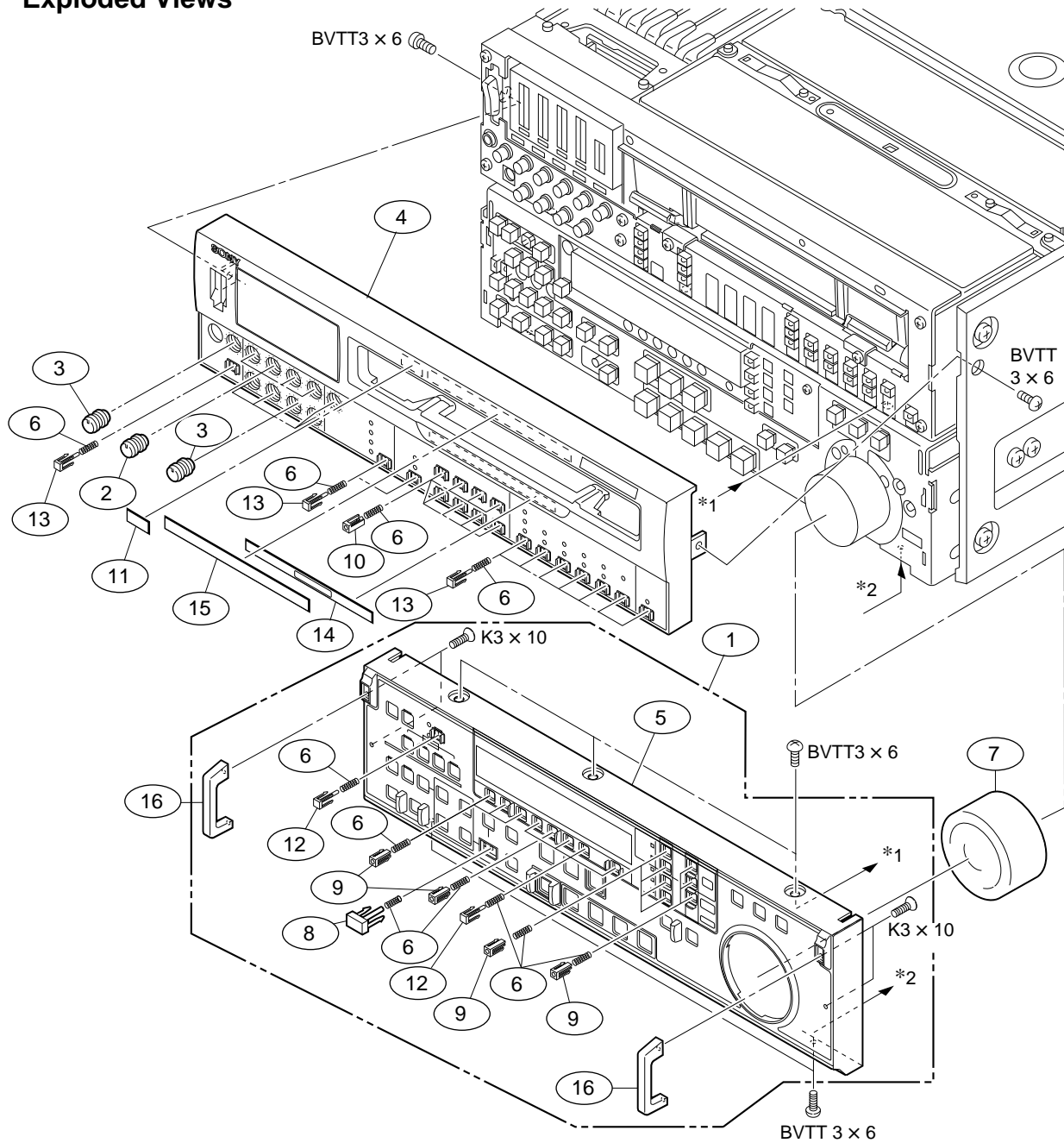
##### 4. Destination Representation

The part indicated For UC/EK in the spare parts list is used in the unit written below.

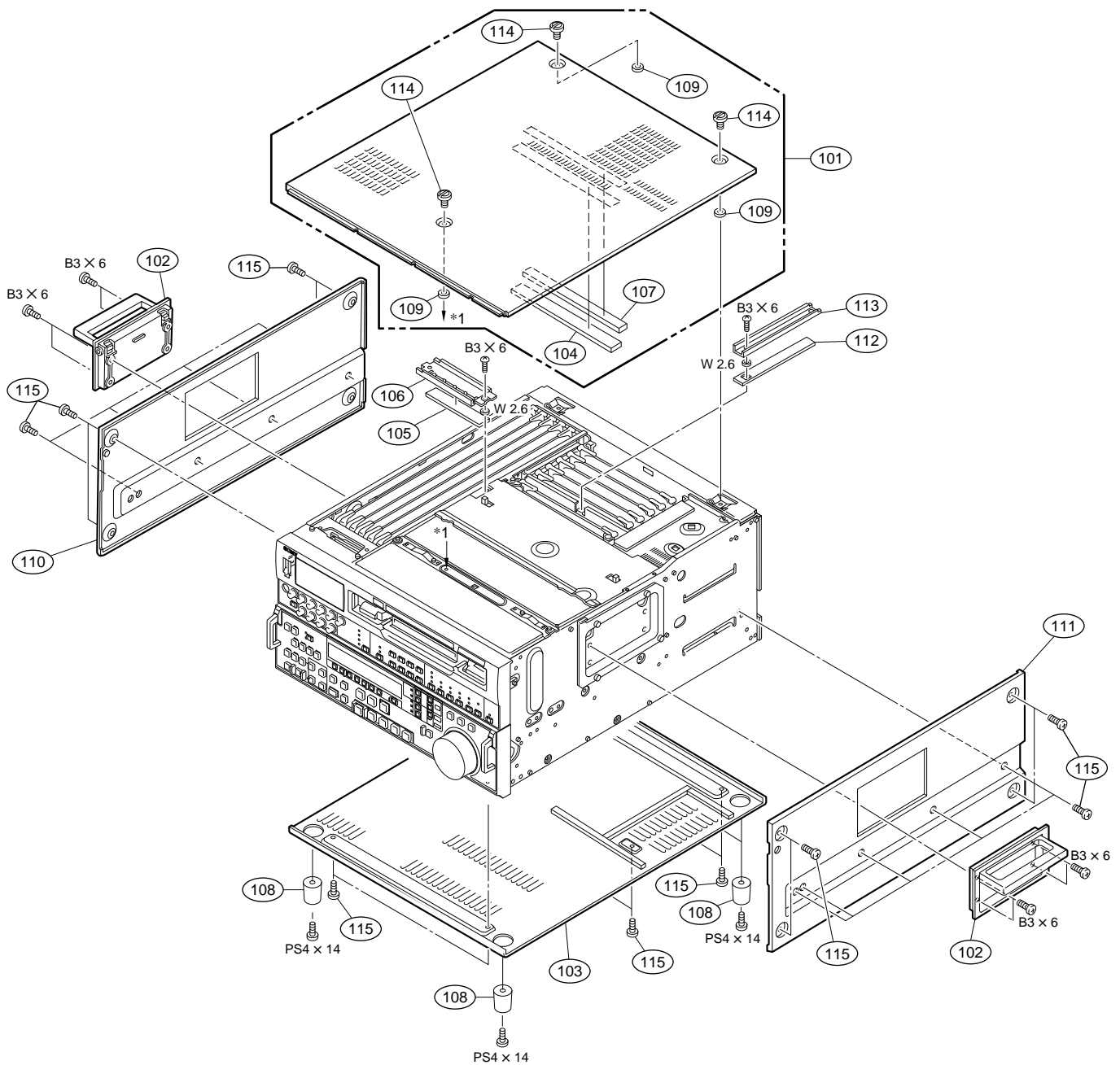
For UC : The part is used in a unit for U.S.A. and Canada.

For EK : The part is used in a unit for regions except the above countries.

## 7-2. Exploded Views



No.	Part No.	SP Description	No.	Part No.	SP Description
1	A-8278-319-C	o PANEL ASSY, KEY(for DNW-A100/A100P)	9	3-180-822-03	s KEY TOP, 6X6(LED,BLACK)
	A-8278-393-A	o PANEL ASSY, KEY (for DNW-A50/A50P/A45/A45P)	10	3-180-822-11	s KEY TOP, 6X6(LED,GRAY)
2	X-3167-824-1	o KNOB ASSY(RED), VOL	11	3-184-994-01	o ISR STICKER (S)
3	X-3167-825-1	o KNOB ASSY(WHITE), VOL	12	3-696-774-01	s KEY TOP, 6X6(BLACK)
4	X-3678-564-3	o PANEL SUB ASSY, FRONT (for DNW-A100/A100P)	13	3-696-774-11	s KEY TOP, 6X6(GRAY)
	X-3678-732-2	o PANEL SUB ASSY, FRONT (for DNW-A50/A50P/A45/A45P)	14	3-604-812-02	o A/D LABEL(HIGH SPEED)(for DNW-A100/A100P)
5	X-3678-565-3	o PANEL SUB ASSY, KEY (for DNW-A100/A100P)	15	3-604-813-01	o A/D LABEL(for DNW-A50/A50P/A45/A45P)
	X-3678-733-2	o PANEL SUB ASSY, KEY (for DNW-A50/A50P/A45/A45P)		3-696-795-02	o LABEL, MODEL NAME(DNW-A100)
6	2-217-533-00	s SPRING, COMPRESSION		3-604-348-01	o LABEL, MODEL NAME(DNW-A100P)
7	3-180-633-03	s RUBBER, DIAL KNOB		3-604-354-01	o LABEL, MODEL NAME(DNW-A50)
8	3-180-817-02	s KEY TOP, 9X16		3-604-355-01	o LABEL, MODEL NAME(DNW-A50P)
				3-604-352-01	o LABEL, MODEL NAME(DNW-A45)
				3-604-353-01	o LABEL, MODEL NAME(DNW-A45P)
			16	3-717-425-31	o HANDLE
				7-685-247-19	s SCREW +K 3X6 TAPPING TYPE2
				7-685-247-29	s SCREW +BVTT 3X6(S)



No Part No. SP Description

101 A-8278-316-B o LID ASSY, UPPER  
 102 X-3642-018-3 o HANDLE ASSY  
 103 X-3678-563-2 o PLATE ASSY, BOTTOM  
 104 3-171-369-02 o LID(A), UPPER, AIR GUARD  
 105 3-171-410-01 o RETAINER(S), PC BOARD(COUSHION)

106 3-180-641-01 o PLATE(L), PC BOARD RETAINER  
 107 3-604-811-01 o LID(B), UPPER, AIR GUARD  
 108 3-604-930-01 s FOOT, RUBBER  
 109 3-688-102-01 o SPACER, M4  
 110 3-696-847-02 o CABINET (LEFT)

No Part No. SP Description

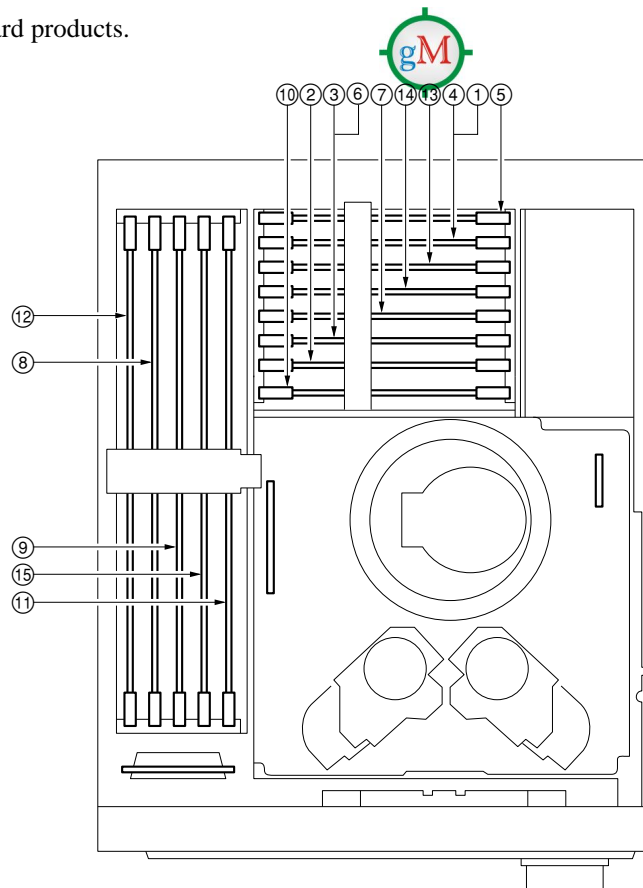
111 3-696-854-01 o RIGHT CABINET  
 112 3-696-882-01 o COUSHION(L), PC BOARD RETAINER  
 113 3-696-887-01 o RETAINER (S), PC BOARD  
 114 3-717-392-01 o SCREW, LID  
 115 3-733-690-01 s SCREW, +B 4X6

7-623-923-01 s WASHER 2.6, NYLON  
 7-682-547-09 s SCREW +B 3X6  
 7-682-664-01 s SCREW +PS 4X14

### 7-3. Plug-in Boards

No.	Generic name	Part No.	SP Description
1	*AD-105	_____	BKNW-104
2	APR-12	A-8273-626-A	o MOUNTED CIRCUIT BOARD, APR-12 (for DNW-A100/A50/A45)
		A-8273-785-A	o MOUNTED CIRCUIT BOARD, APR-12P (for DNW-A100P/A50P/A45P)
3	APR-13	A-8273-619-A	o MOUNTED CIRCUIT BOARD, APR-13
4	*DEC-65	_____	BKDW-505 (for DNW-A100/A50/A45)
			BKDW-506 (for DNW-A100P/A50P/A45P)
5	DIF-42	A-8273-573-A	o MOUNTED CIRCUIT BOARD, DIF-42
6	*DIF-44	_____	BKNW-105
7	DM-89	A-8275-154-B	o MOUNTED CIRCUIT BOARD, DM-89 (for DNW-A100/A50/A45)
		A-8275-088-B	o MOUNTED CIRCUIT BOARD, DM-89P (for DNW-A100P/A50P/A45P)
8	DPR-71	A-8273-621-A	o MOUNTED CIRCUIT BOARD, DPR-71 (for DNW-A100/A100P)
		A-8277-938-A	o MOUNTED CIRCUIT BOARD, DPR-71B (for DNW-A50/A50P/A45/A45P)
9	DPR-73	A-8273-623-A	o MOUNTED CIRCUIT BOARD, DPR-73
10	EQ-56	A-8273-563-A	o MOUNTED CIRCUIT BOARD, EQ-56 (for DNW-A100/A100P)
		A-8277-937-A	o MOUNTED CIRCUIT BOARD, EQ-56B (for DNW-A50/A50P/A45/A45P)
11	SS-63	A-8273-560-A	o MOUNTED CIRCUIT BOARD, SS-63
12	SSX-1	A-8273-628-A	o MOUNTED CIRCUIT BOARD, SSX-1
13	TBC-23	A-8275-155-B	o MOUNTED CIRCUIT BOARD, TBC-23 (for DNW-A100/A50/A45)
		A-8275-271-B	o MOUNTED CIRCUIT BOARD, TBC-23PG (for DNW-A100P/A50P/A45P)
14	TBC-24	A-8275-156-A	o MOUNTED CIRCUIT BOARD, TBC-24 (for DNW-A100/A50/A45)
		A-8275-087-A	o MOUNTED CIRCUIT BOARD, TBC-24P (for DNW-A100P/A50P/A45P)
15	VPR-17	A-8273-571-A	o MOUNTED CIRCUIT BOARD, VPR-17 (for DNW-A100/A50/A45)
		A-8273-774-A	o MOUNTED CIRCUIT BOARD, VPR-17P (for DNW-A100P/A50P/A45P)

\*: Please order the standard products.



< Top View >



## 7-4. Packing Materials and Supplied Accessories

### For UC model

#### DNW-A100/A50/A45

#### DNW-A100P/A50P/A45P

Ref. No. or Q'ty	Part No.	SP Description
1pc	△ 1-551-812-11	s CORD, POWER
1pc	1-751-019-81	o CABLE, REMOTE CONTROL 9P
1pc	1-774-818-11	o CONNECTOR, SQUARE TYPE (SCSI-3)
1pc	2-990-242-01	s HOLDER (B), PLUG
1pc	3-181-533-02	o CUSHION (LOWER)
1pc	3-181-534-02	o CUSHION (UPPER)
1pc	3-181-535-01	o SPACER (A)
1pc	3-181-536-01	o SPACER (B)
1pc	3-696-874-02	o INDIVIDUAL CARTON (for DNW-A100)
	3-603-933-01	o INDIVIDUAL CARTON (for DNW-A100P)
	3-603-936-01	o INDIVIDUAL CARTON (for DNW-A50)
	3-603-937-01	o INDIVIDUAL CARTON (for DNW-A50P)
	3-603-934-01	o INDIVIDUAL CARTON (for DNW-A45)
	3-603-935-01	o INDIVIDUAL CARTON (for DNW-A45P)
4pcs	7-682-965-01	s SCREW +PSW 4X16

### For EK model

#### DNW-A100P/A50P/A45P

Ref. No. or Q'ty	Part No.	SP Description
1pc	△ 1-590-910-11	s CORD SET, POWER
1pc	1-751-019-81	o CABLE, REMOTE CONTROL 9P
1pc	1-774-818-11	o CONNECTOR, SQUARE TYPE (SCSI-3)
1pc	3-170-078-01	s HOLDER (B), PLUG
1pc	3-181-533-02	o CUSHION (LOWER)
1pc	3-181-534-02	o CUSHION (UPPER)
1pc	3-181-535-01	o SPACER (A)
1pc	3-181-536-01	o SPACER (B)
1pc	3-603-933-01	o INDIVIDUAL CARTON (for DNW-A100P)
	3-603-937-01	o INDIVIDUAL CARTON (for DNW-A50P)
	3-603-935-01	o INDIVIDUAL CARTON (for DNW-A45P)
4pcs	7-682-965-01	s SCREW +PSW 4X16

## 7-5. Fixtures List

Part No. SP Description

J-6035-070-A o EXTRACTION TOOL (for PLCC socket)  
J-6080-029-A o SMALL DENTAL MIRROR (Round type ø12)  
J-6086-570-A o REFERENCE FLAT PLATE  
J-6152-450-A o WIRE CLEARANCE CHECK GAUGE SET

J-6251-090-A o TORQUE SCREWDRIVER'S HEXAGONAL BIT  
(d=2.5 mm, l=120 mm)  
J-6323-440-A o TORQUE SCREWDRIVER'S HEXAGONAL BIT  
(d=0.89 mm, l=50 mm)

J-6323-420-A o TORQUE SCREWDRIVER'S BIT (+2 mm, l=75 mm)  
J-6323-430-A o TORQUE SCREWDRIVER'S BIT (+3 mm, l=50 mm)  
J-6252-510-A o TORQUE SCREWDRIVER (6 kg•cm) (0.6 N•m)  
J-6252-520-A o TORQUE SCREWDRIVER (12 kg•cm) (1.2 N•m)

J-6269-810-A o EXTENSION BOARD (S), EX-377  
A-8277-211-A o EXTENSION BOARD (L), EX-555  
A-8277-212-A o EXTENSION BOARD (S), EX-556  
J-6320-870-A o REEL MOTOR SHAFT SLANTNESS CHECK FIXTURE  
J-6320-880-A o CASSETTE REFERENCE PLATE (L)

J-6322-610-A o TAPE GUIDE ADJUSTMENT DRIVER  
J-6329-350-A o REEL TABLE HEIGHT GAUGE  
1-957-071-11 o EXTENSION CABLE SET

1-952-684-11 o EXTENSION CABLE (14P)  
3-184-527-01 o CLEANING CLOTH (15 cmX15 cm)  
7-432-114-11 o LOCKING COMPOUND, 1401B (200g)  
7-661-018-18 o DIAMOND OIL, NT-68 (50 ml)  
7-651-000-10 o SONY GREASE, SGL-601 (50 g)

7-700-736-01 o L-SHAPED HEXAGONAL WRENCH (d=1.27 mm)  
7-700-736-05 o L-SHAPED HEXAGONAL WRENCH (d=1.5 mm)  
7-700-736-06 o L-SHAPED HEXAGONAL WRENCH (d=0.89 mm)  
7-700-766-04 o HEXAGONAL WRENCH DRIVER (d=2.5 mm)

8-960-075-01 o ALIGNMENT TAPE, SR5-1 (for 525/60 saystem)  
8-960-075-11 o ALIGNMENT TAPE, SR2-1 (for 525/60 saystem)  
8-960-075-51 o ALIGNMENT TAPE, SR5-1P (for 625/50 saystem)  
8-960-075-61 o ALIGNMENT TAPE, SR2-1P (for 625/50 saystem)

8-960-096-01 o ALIGNMENT TAPE, CR2-1B  
8-960-096-41 o ALIGNMENT TAPE, CR5-1B (METAL PARTICLE TAPE)  
(for DNW-A100/A50/A45)  
8-960-097-44 o ALIGNMENT TAPE, CR5-2A (OXIDE TAPE)  
(for DNW-A100/A50/A45)  
8-960-097-45 o ALIGNMENT TAPE, CR8-1A (OXIDE TAPE)  
(for DNW-A100/A50/A45)  
8-960-096-51 o ALIGNMENT TAPE, CR2-1B PS  
(for DNW-A100P/A50P/A45P)

8-960-096-91 o ALIGNMENT TAPE, CR5-1B PS (METAL PARTICLE TAPE)  
(for DNW-A100P/A50P/A45P)  
8-960-096-86 o ALIGNMENT TAPE, CR8-1B PS (METAL PARTICLE TAPE)  
(for DNW-A100P/A50P/A45P)  
8-960-098-44 o ALIGNMENT TAPE, CR5-2A PS (OXIDE TAPE)  
(for DNW-A100P/A50P/A45P)  
8-960-098-45 o ALIGNMENT TAPE, CR8-1A PS (OXIDE TAPE)  
(for DNW-A100P/A50P/A45P)

9-911-053-00 o THICKNESS GAUGE  
9-919-573-01 o CLEANING LIQUID  
J-6332-240-A o VISC PHASE ADJUSTING TOOL  
(for DNW-A100P/A50P/A45P only)

# Appendix A

## Outline of Format

This section describes the recording format, heads configuration and signal processing.

### A-1. Outline

Sony DNWseries are 1/2-inch component digital VTRs using a new “Betacam SX” format. This unit is a Digital Video Hybrid Recorder in which the “Betacam SX” VTR and hard disk were integrated. Incorporation of hard disk into the VTR enables a nonlinear video/audio edit function.

In the Betacam SX format, “MPEG2 4:2:2 Profile @Main Level” is used as a compression system.

Interframe compression technology is first used as VTR format. The data rate is compressed to approximately 1/10 by this technology. The compressed data is then recorded on tape <sup>(Note1)</sup>.

By compressing of the data late, the S cassette makes continuous recording of 60 minutes possible, and the L cassette makes continuous recording of 184 minutes possible.

Moreover, the data can be recorded on not only the cassette for the Betacam SX but also the metal particle tape for the conventional Betacam SP by Betacam SX format.

This unit enables the high-reliability playback without using a high-precision tracking by the head configuration based on Multiple Tracing technology.

In the DNW-A100/A100P, the data can be transferred at four times the normal speed by application of the Multiple Tracing technology.

In this unit, the analog tape (oxide and metal particle) recorded based on the Betacam/Betacam SP format can also be played back. Therefore, current analog Betacam recorded tapes can also be used directly.

Note 1: The audio data is recorded by non-compression.

### Multiple Tracing Technology

In the Multiple Tracing technology, the non-tracking technology used for a digital audio tape recorder is applied for VTR. This technology requires no high-precision tracking during recording as well as playback.

For the playback at variable speed, it was necessary changing the drum rotation relative the tape speed or using the dynamic tracking (DT) heads for precision tracking in the past.

In this multiple tracking technology, two playback heads are provided for one recorded track. If one playback head missed the recorded track, the another playback head makes up the complete playback signal.

This technology enables the variable-speed (JOG) playback (–1 to +1 times the normal speed) without using the conventional dynamic tracking (DT) head. Moreover, by increasing the number of playback heads, it can transfer data from the tape to the signal processing circuit at high speed without changing the drum rotation changing only the tape speed. <sup>(Note 2)</sup>

Note2: DNW-A100/A100P is equipped with this function.

### A-2. Recording Format

---

#### Foot Print

Fig. A-2-1 shows the foot print in the 525/60 system (the top of figure) and the 625/50 system (the bottom of figure) . This figure shows the tape pattern of a Betacam SX at right, and the foot print of a Betacam SP at left, respectively.

#### Foot Print of Helical Track

In the Betacam SX format, two-frame (1 GOP\*) video data, system data and four-channel audio data is recorded on ten (525/60 system) or twelve (625/50 system) helical tracks.

\*GOP: Group of Picture

This unit records two helical tracks in pairs. Therefore, the drum rotation is approximately 75 per second (common in 525/60 and 625/50 systems).

In the playback of the Betacam/Betacam SP format, the number of drum rotations is approximately 30 per second (525/60) or 25 per second (625/50) .

Moreover, the tape speed of the Betacam SX format is lower than that of the Betacam/Betacam SP format by approximately half.

This unit detects whether the tape to be played back is based on the Betacam SX format or Betacam/Betacam SP format by the initial signal of playback, and as a result, the tape is played back by the proper drum rotation and tape speed.

### Reference

The drum diameter of the Betacam SX VTR is larger than that of the Betacam/Betacam SP VTR by approximately 9%.

Therefore the helical track of the Betacam/Betacam SP format is played back as a time-compressed signal by 9%. (Since the relative speed of the head to tape increases proportionally to the drum diameter even if the drum rotation and the tape speed is made same as the Betacam SX format.)

This playback signal is extended time by a signal processing circuit in the next stage (TBC\*), and output.

\*TBC: Time Base Corrector

### Foot Print of Longitudinal Track

The foot print of the Betacam SX format has three longitudinal tracks (control track, time code track, and AUX track). These tracks coincide with the foot print of the Betacam/Betacam SP format (except audio CH1 track). In this unit, the all longitudinal tracks of the Betacam/Betacam SP format can be played back with additional stationary head (AT head) which play back audio CH1 track of the Betacam/Betacam SP format to the Betacam SX VTR.

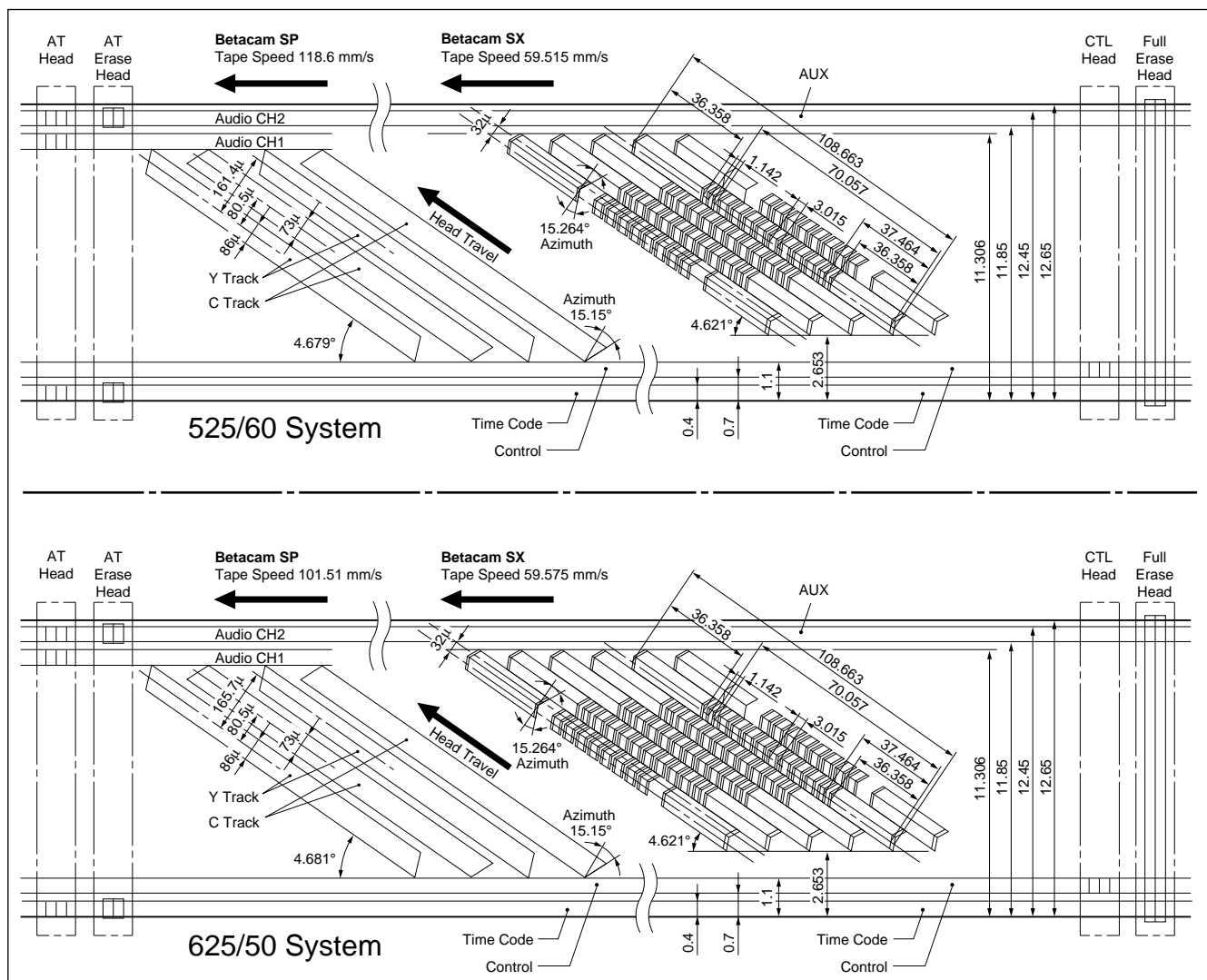


Fig.A-2-1. Foot Print

## Data Arrangement on Program Tracks

Fig. A-2-2 shows the arrangement of data recorded on helical tracks (program tracks). The size of each sector in the figure is not the actual dimension ratio. For more information on the dimension, refer to Fig. A-2-1.

The Betacam SX format uses an azimuth recording system to perform high-density recording. In other words, two heads with an azimuth angle of approximately 15 degrees in the direction opposite to each other is paired to record two program tracks (tracks A and B) during a turn of the drum. Two-frame (1 GOP) video data and audio data are recorded on ten (525/60) or twelve (625/50) program tracks.

Each program track is constructed to have eight audio sectors in the center and to have two video sectors beyond the system data put before and behind the audio sectors.

Each channel of the audio sectors is arranged in the longitudinal direction of the tape. However, each channel is difficult to be influenced by the longitudinal scratch on tape because it is divided into two sectors.

Two-frame video data is dispersed into twenty (525/60) or twenty four (625/50) video sectors for recording, and four-channel audio data is dispersed into twenty (525/60) or twenty four (625/50) audio sectors for recording for every channel. Edit gaps are set between the sectors so that each channel can be edited independently. The control data for executing the Multiple Tracing and the AUX data released for the user are recorded in a system data area.

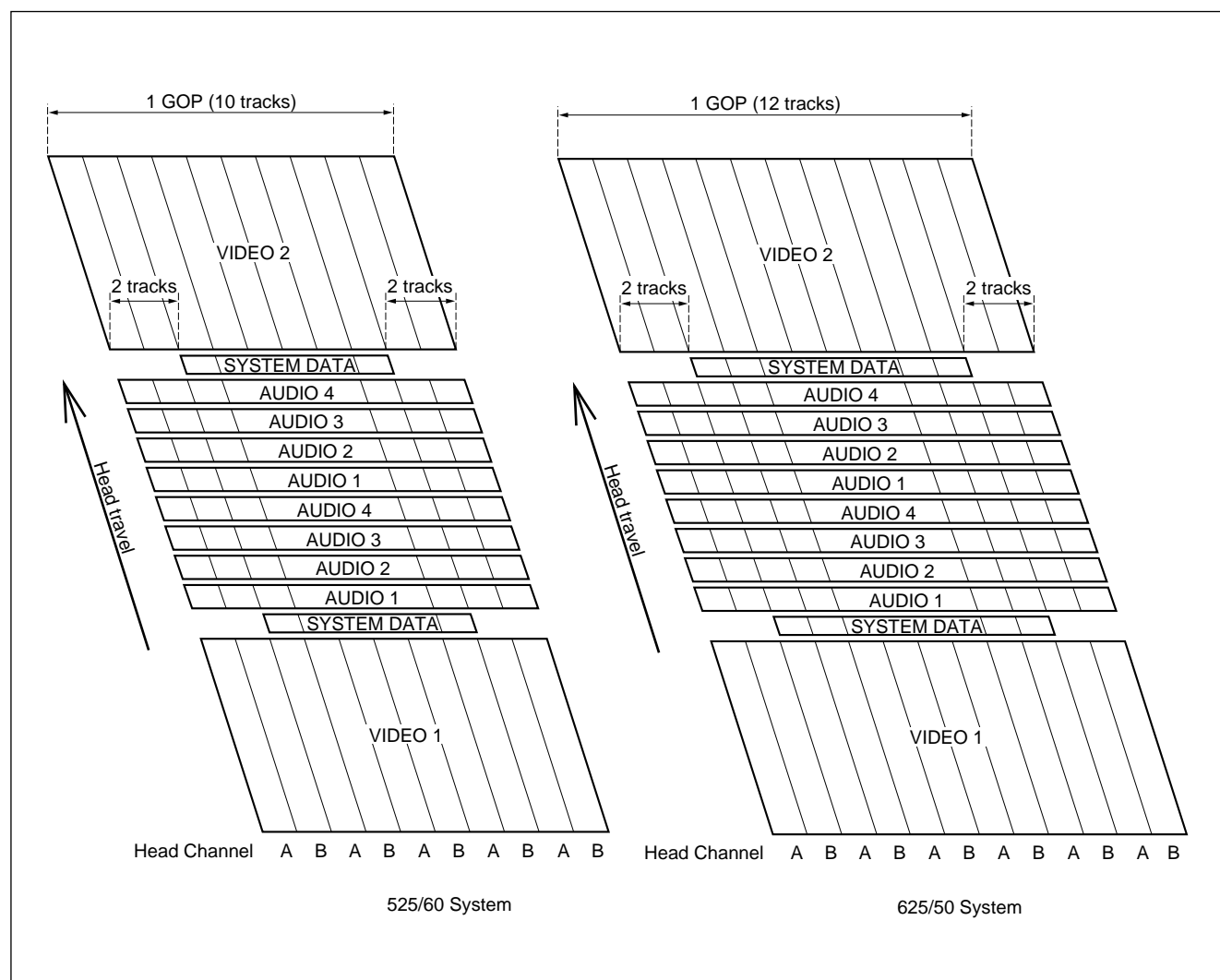


Fig.A-2-2. Data Arrangement on Program Tracks

Longitudinal Tracks of Betacam SX Format

As shown in Fig. A-2-1, a control track, time code track, and AUX track are provided in the longitudinal direction of the tape.

Fig. A-2-3 shows the CTL signal and time code signal, and the timing relation between these signals and video reference signals. The top of the figure is for the 525/60 system, the bottom of the figure is for the 625/50 system.

The CTL signal is recorded by approx. 60 Hz (525/60) or 50 Hz (625/50) rectangular pulse system and controls the start timing of each field data at the rising edge of the pulse. The CTL signal also modulates the duty cycle of the rectangular wave to 65:35 in the first field of a color flame so as to identify the field number and control the color framing.

The time code signal uses a conventional longitudinal time code based on the SMPTE/EBU standard. One flame consists of 80 bits. Flame number, second, minute, hour, and sync word data items are coded by a biphasic mark coding method and recorded for every flame. A user bit is written in time data for recording as a binary group.

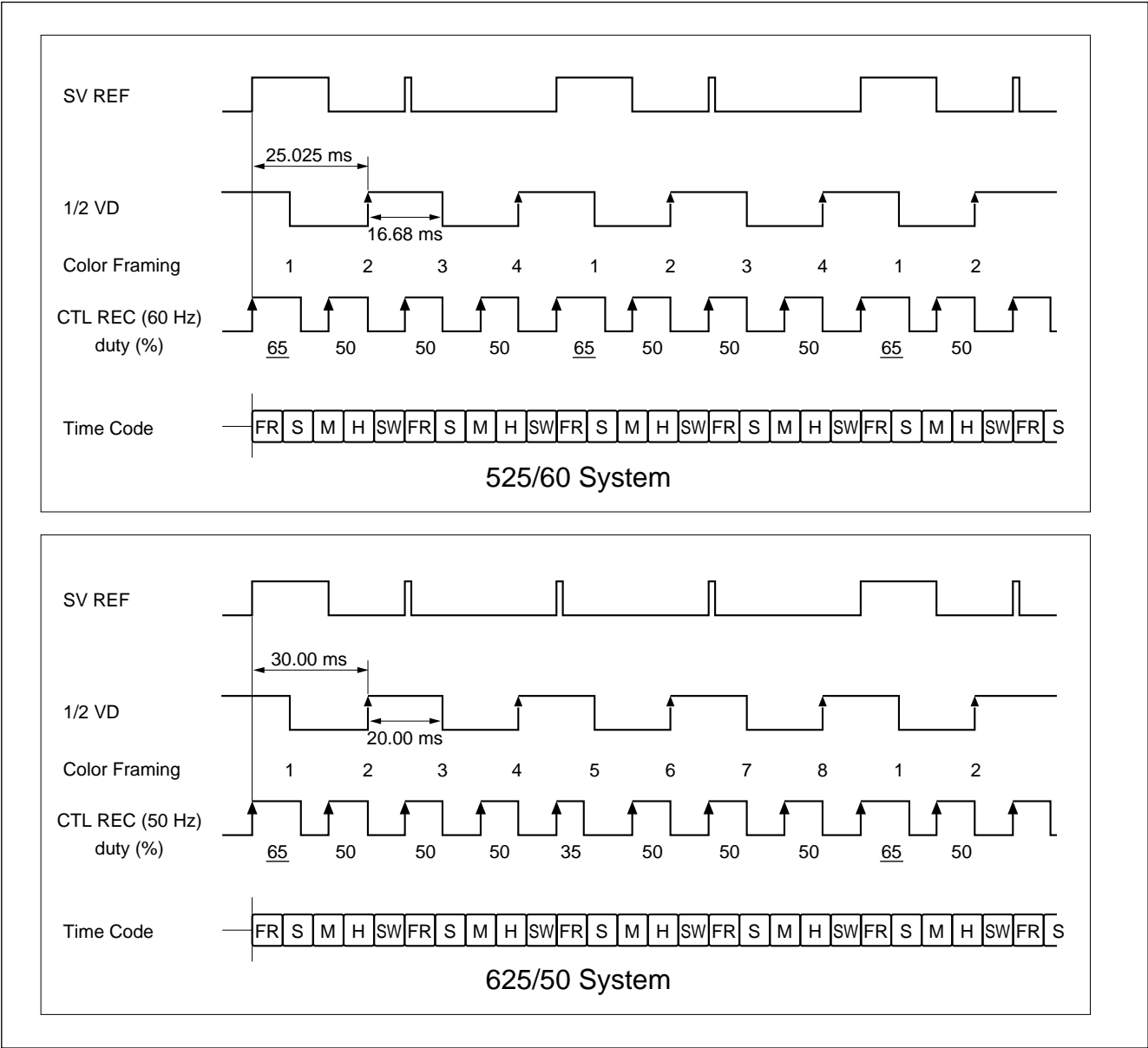


Fig. A-2-3. Recording Timing Chart of CTL Signal and Time Code Signal

### A-3. Head Configuration

Fig. A-3-1 shows the configuration of the stationary and rotary heads in the DNW-A100/A100P, and its top view.

However, the rotary heads can be actually viewed only their tips from the side of the drum.

There are two recording heads (A and B) on the rotary drum for the Betacam SX format. The erase head is mounted in the height ahead by 16 tracks than the recording head and erases the recording tracks of A and B channel collectively.

There are 16 or 8 playback heads on the rotary drum for the Betacam SX format. (The data transfer at four times the normal speed requires 16 playback heads.)

- DNW-A100/A100P : 16 heads (PB A1 to PB A8 and PB B1 to PB B8)

−1 to +1 Variable-speed playback :

PB A1, PB A5, PB B1, and PB B5 operate.

Variable-speed playback except described above

All heads operate.

During recording :

PB A1 and PB B1 operate as the CONFIDENCE head.

- DNW-A50/A50P/A45/A45P :

8 heads (PB A2, PB A4, PB A6, PB A8 and PB B2, PB B4, PB B6, PB B8)

−1 to +1 Variable-speed playback :

PB A2, PB A6, PB B2, and PB B6 operate.

Variable-speed playback except described above :

All heads operate.

During recording :

PB A2 and PB B2 operate as the CONFIDENCE head.

CONFIDENCE heads: Heads that plays back the recorded tracks during recording by the recording heads. This head is used to confirm the condition recorded at that time.

There are four playback heads (two-channel Y/C heads are mounted in pairs at an angle of 180 degrees opposite to each other) for the Betacam/Betacam SP format.

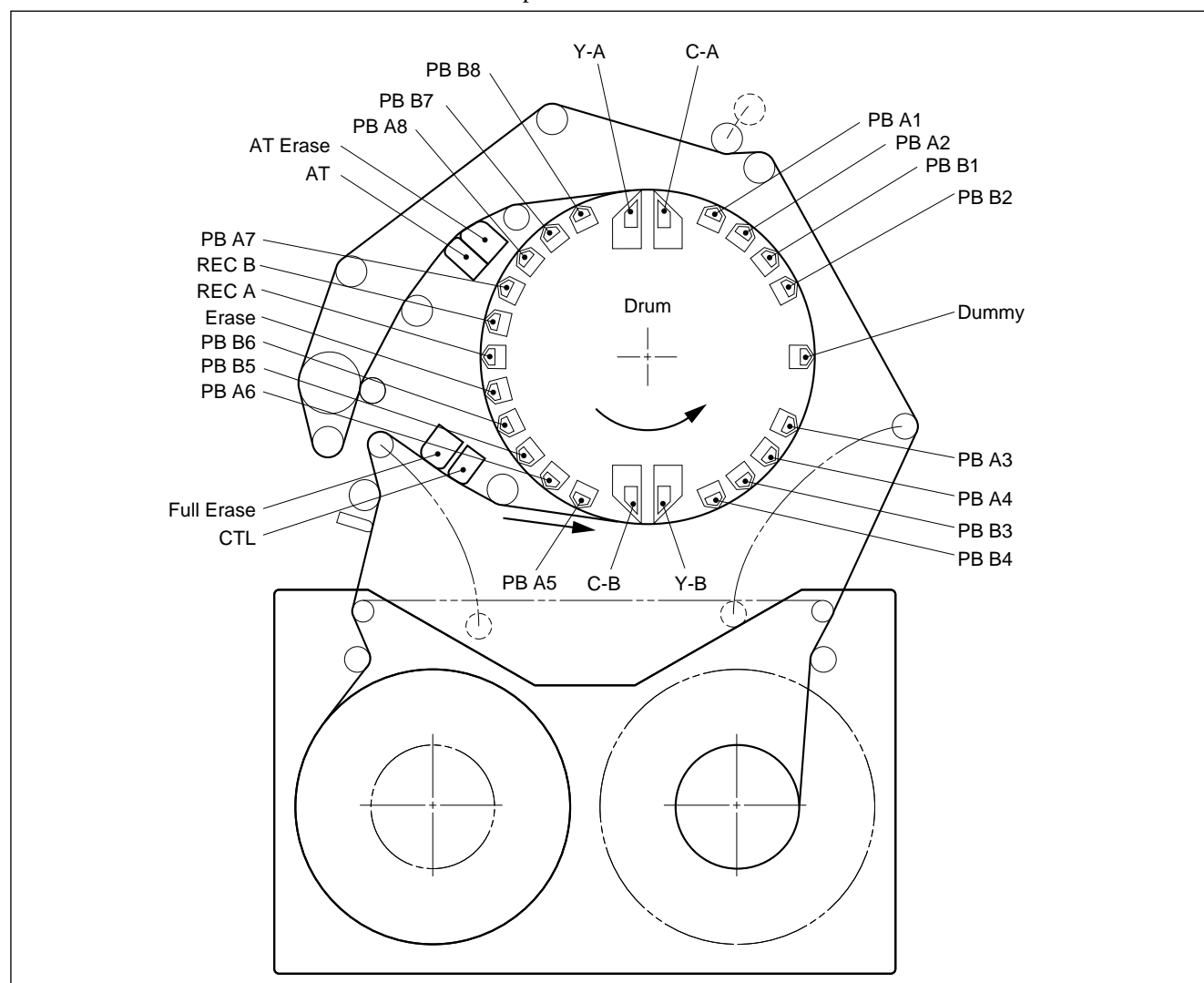


Fig. A-3-1. Configuration and Placement of Stationary Heads and Rotary Heads (DNW-A100/A100P)

## A-4. Signal Processing

### A-4-1. Features of Signal Processing

In the Betacam SX format, MPEG2 4:2:2 Profile @Main Level (omitted as MPEG2 4:2:2P@ML hereafter) is employed as the compression system of a video signal. In the MPEG2 4:2:2P@ML coder of this unit, video data is compressed for each GOP (1GOP is two frames) by frame correlation. As a result, video data can be compressed efficiently. In the DNW-A100/A100P, the video data is compressed to approximately 1/10.

This unit also uses an SDDI (serial digital data interface) format for transmitting and processing the video data and audio data inside equipment. Therefore, no data conversion is required during transmission and reception of data to and from the external equipment. This enables a high-speed and non-deterioration dubbing.

The SDDI format can exchange system control data as well as video data and audio data. Moreover, the conventional external equipment (routing switcher provided with an SDI interface) can be continuously used because the SDDI format directly uses the data structure of an SDI (serial digital interface: SMPTE 259M, CCIR656-III) format.

### A-4-2. Outline of Signal Processing

#### Reproduction of the Betacam/Betacam SP Tape

The video and audio signals reproduced from the tape based on a Betacam or Betacam SP format are converted into a digital signal. After that, the output data is also sent to the video and audio output terminals after gain adjustment by output processor. The video data is compressed using an MPEG2 4:2:2P@ML coder, integrated with the audio data using an SDDI interface, and output to the hard disk drive.

(Refer to Fig. A-4-1.)

#### Recording on the Hard Disk

The video data and audio data from each source (from tape or external) are integrated into the data based on an SDDI format using an SDDI interface. The resultant data is then recorded on the hard disk via an SCSI interface.

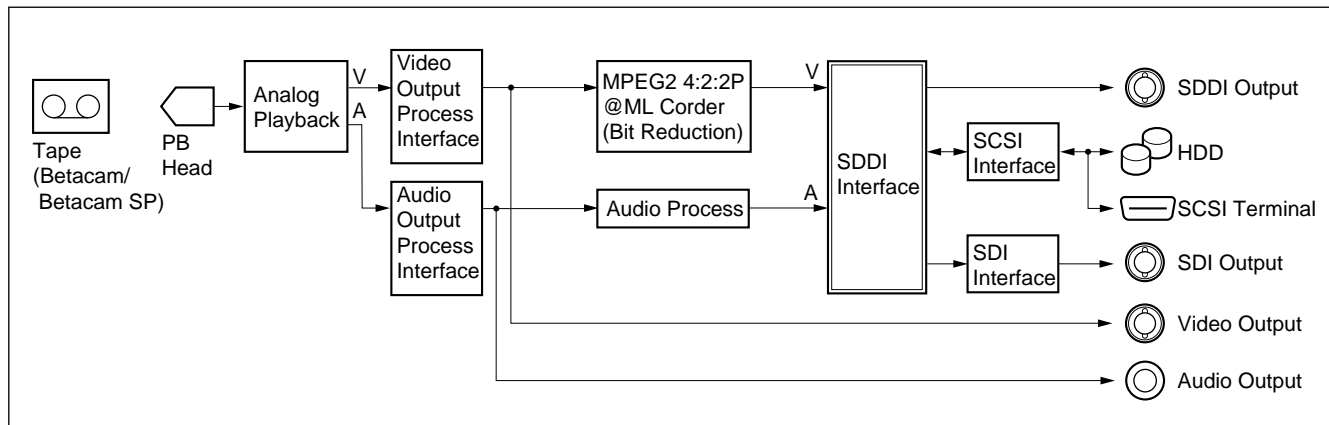


Fig. A-4-1



## External Input

Analog or digital video and audio input signals are converted into parallel video data and serial audio data, respectively. (Refer to Fig. A-4-2.)

## Recording on the Tape (Betacam SX Format)

Codes are added to the compressed video data and recording-level processed audio data for error correction using an ECC encoder.

The video data and audio data are rearranged in the recording format of the tape so as to add error correction codes (Reed-Solomon product codes). At this time, the shuffling is performed simultaneously. After that, outer ECC data, sync data, ID data, and inner ECC data are added sequentially. Lastly, channel-coded recording serial data is sent to the head and recorded on the tape. The video data and audio data recorded on the tape are gathered together for each GOP (1GOP is two frames) that is a compression unit of video data. The video data and audio data of 1GOP consist of ten tracks (525/60 system) or 12 tracks (625/50 system) on the tape. An error occurring during playback is corrected in this range. Therefore, a higher error correction function can be obtained.

(Refer to Fig. A-4-2.)

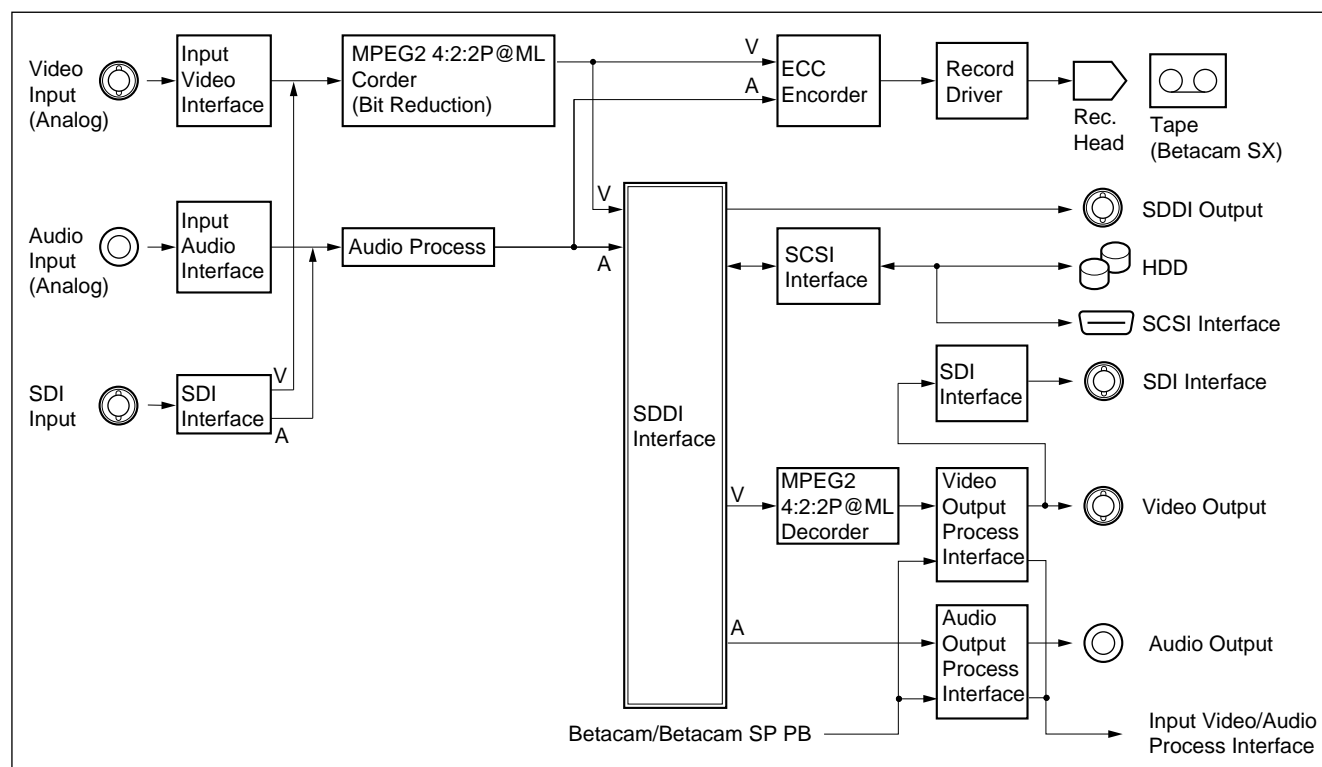


Fig. A-4-2

## Playback of Betacam SX Tape

This unit uses multiple-tracing technology in which the number of playback heads is larger than that of recording heads. This technology requires no high-precision tracking. It also enables data to be played back at high speed by increasing the number of playback heads.

The data played back by multiple heads is error-corrected using an inner code by an ECC decoder. After that, valid data is selected from memory according to error information and error-corrected using an outer code. The corrected video data and audio data are output to the 1. SDDI output terminal\*, 2. hard disk drive, 3. SDI output terminal, and 4. video/audio output terminal via an SDDI interface, respectively. (Refer to Fig. A-4-3.)

## Video/Audio Output during High-Speed Playback (DNW-A100/A100P only)

During high-speed playback (FEED mode) of the Betacam SX tape and high-speed read from the hard disk drive, complete data is output from the SDDI output terminal. A frame-lapse picture is output from the video output terminal, and a sound generated during fast-forward playback is output from the audio output terminal. The output data can be used for monitoring.

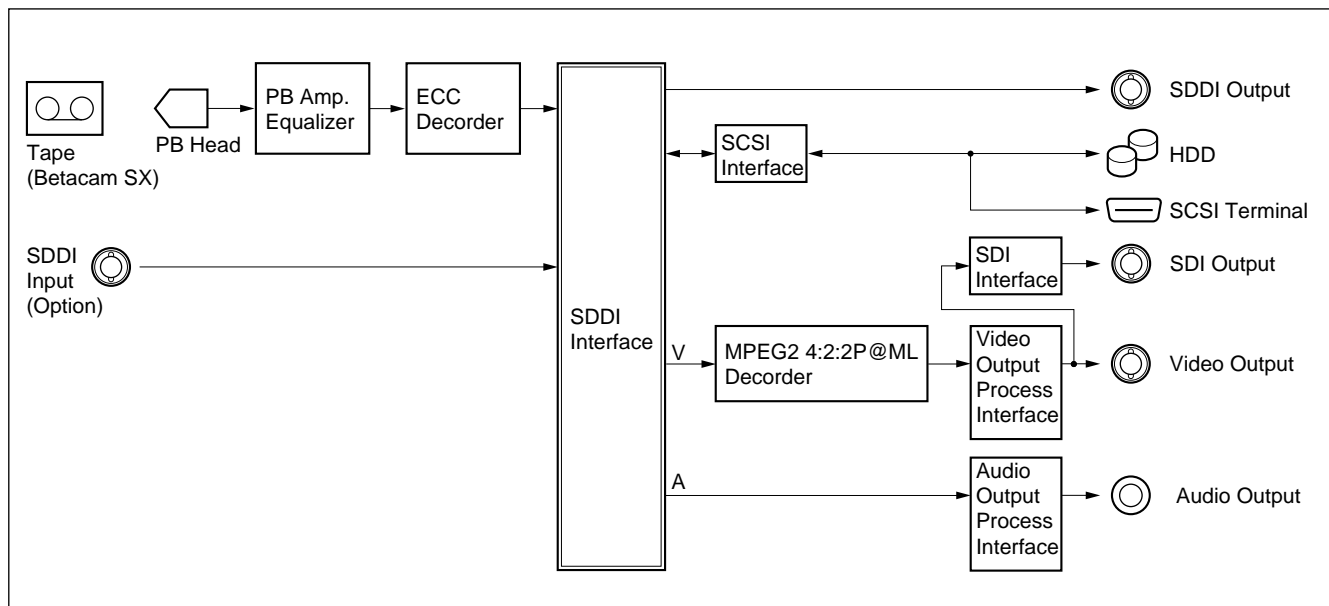


Fig. A-4-3

\*1, \*2 : DNW-A100/A100P is provided with the SDDI output terminal.

## Internal Dubbing

This unit has a function that dubs data from the Betacam/Betacam SP/Betacam SX tape to the hard disk drive and from the hard disk drive to the Betacam SX tape. For dubbing from the Betacam SX tape to the hard disk drive, the SDDI format data during tape playback is directly transmitted to the recording system of the hard disk drive. As a result, in the DNW-A100/A100P, high-speed dubbing can be obtained.

The dubbing operation from the hard disk drive to the Betacam SX tape can also be obtained by internally connecting the data read from the hard disk drive and processing as an input signal. This enables the result of nonlinear editing using a hard disk to be recorded on the tape. (Refer to Fig. A-4-4.)

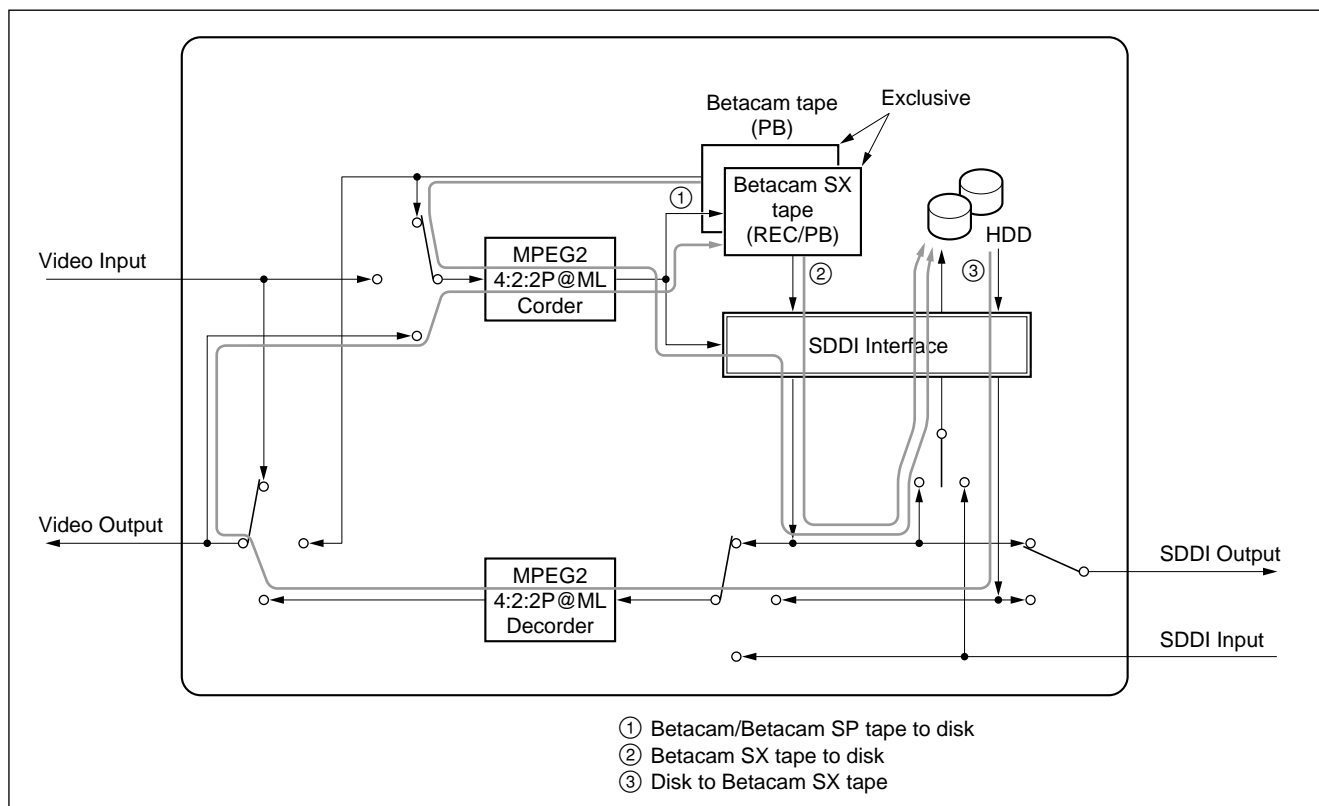


Fig. A-4-4



## Appendix B

### Setting Check Sheet

It is recommended to copy these check sheets and write down the setup conditions (switch and so on) under the application.

If the setting is changed temporarily by changing operating condition, the setting can be reset easily.

It is recommended to attach the sheets to the unit when check, maintenance and repair.

If the unit is used frequently by changing the combination of each system, making the sheets are convenient.

(Make use of the check sheets in prevention of setting error.)

Model name: DNW- \_\_\_\_\_ Serial No.: \_\_\_\_\_

- Hardware

ANALOG VIDEO INPUT : ☐ COMPOSITE (BKDW-505/506)

☐ COMPONENT (BKNW-104)

AUDIO INPUT: ☐ ANALOG (Standard)

☐ ANALOG (Standard)

☐ AES/EBU (BKNW-105)

EXTERNAL HDD : ☐ Not connected

☐ Not connected

☐ Connected

SDDI INPUT : ☐ Not installed

☐ Not installed

(DNW-A100/A100P only) ☐ Installed (BKNW-103)

☐ Installed (BKNW-103)

- Software

SYS1 ROM version: \_\_\_\_\_

SYS2 ROM version: \_\_\_\_\_

SV1 ROM version: \_\_\_\_\_

SSX ROM version: \_\_\_\_\_

• RS-232 baud rate: \_\_\_\_\_ bps

Flow control: ☐ H/W  
☐ XOFF(XON/XOFF)

- Hours meter

Write down the value of hours meter when checking, servicing and maintaining.

ITEM	Date	Hours meter
H01: OPERATION HOURS	/	
H02: DRUM RUNNING HOURS	/	
H03: TAPE RUNNING HOURS	/	
H04: THREADING COUNTER	/	
H12: DRUM RUNNING HOURS(Resettable)	/	
H13: TAPE RUNNING HOURS(Resettable)	/	
H14: THREADING COUNTER(Resettable)	/	
H15: AIRFILTER OPERATION HOURS(Resettable)	/	

## Connector panel

Switch		Factory setting	Setting		
Analog audio input level 600 $\Omega$	CH1	HIGH ON	<input type="checkbox"/> LOW	<input type="checkbox"/> HIGH OFF	<input type="checkbox"/> HIGH ON
	CH2	HIGH ON	<input type="checkbox"/> LOW	<input type="checkbox"/> HIGH OFF	<input type="checkbox"/> HIGH ON
	CH3	HIGH ON	<input type="checkbox"/> LOW	<input type="checkbox"/> HIGH OFF	<input type="checkbox"/> HIGH ON
	CH4	HIGH ON	<input type="checkbox"/> LOW	<input type="checkbox"/> HIGH OFF	<input type="checkbox"/> HIGH ON
Reference video input 75 $\Omega$		ON	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	
Composite video input 75 $\Omega$		ON	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	

## Upper control panel

Switch		Factory setting	Setting			
VIDEO INPUT		SDI	<input type="checkbox"/> SDDI* (VIDEO & AUDIO)		<input type="checkbox"/> SDI	
			<input type="checkbox"/> COMPONENT (Y-R, B)		<input type="checkbox"/> COMPOSITE	
			*: For DNW-A100/A100P only			
AUDIO INPUT		ANALOG	<input type="checkbox"/> MENU	<input type="checkbox"/> SDI	<input type="checkbox"/> ANALOG/AES/EBU	
AUDIO MONITOR	L	CH-1	<input type="checkbox"/> CH-1	<input type="checkbox"/> CH-2	<input type="checkbox"/> CH-3	<input type="checkbox"/> CH-4
	R	CH-2	<input type="checkbox"/> CH-1	<input type="checkbox"/> CH-2	<input type="checkbox"/> CH-3	<input type="checkbox"/> CH-4
TC		AUTO	<input type="checkbox"/> LTC	<input type="checkbox"/> AUTO	<input type="checkbox"/> VITC	
TC GENERATOR		INT	<input type="checkbox"/> INT	<input type="checkbox"/> EXT		
		PRESET	<input type="checkbox"/> PRESET	<input type="checkbox"/> REGEN		
		REC RUN	<input type="checkbox"/> FREE RUN	<input type="checkbox"/> REC RUN		
		DF (525/60)	<input type="checkbox"/> DF	<input type="checkbox"/> NDF		
VITC		ON	<input type="checkbox"/> ON	<input type="checkbox"/> OFF		
REMOTE/LOCAL		LOCAL	<input type="checkbox"/> 9P (REMOTE)	<input type="checkbox"/> (LOCAL)		

## Sub control panel

Switch		Factory setting	Setting		
EMPHASIS		OFF	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	
CHARACTER		ON	<input type="checkbox"/> OFF	<input type="checkbox"/> ON	
DOLBY NR		ON	<input type="checkbox"/> OFF	<input type="checkbox"/> ON	
OUT REF		REF	<input type="checkbox"/> INPUT VIDEO	<input type="checkbox"/> REF	
PROCESS CONTROL		LOCAL	<input type="checkbox"/> REMOTE	<input type="checkbox"/> MENU	<input type="checkbox"/> LOCAL
VIDEO		PRESET	<input type="checkbox"/> PRESET	<input type="checkbox"/> MANUAL	
CHROMA		PRESET	<input type="checkbox"/> PRESET	<input type="checkbox"/> MANUAL	
SET UP		PRESET	<input type="checkbox"/> PRESET	<input type="checkbox"/> MANUAL	
Y/C DELAY		PRESET	<input type="checkbox"/> PRESET	<input type="checkbox"/> MANUAL	
CHROMA PHASE		PRESET	<input type="checkbox"/> PRESET	<input type="checkbox"/> MANUAL	
REC/INHIBIT		OFF	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	
KEY INHIBIT		OFF	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	
CAPSTAN LOCK		4FD	<input type="checkbox"/> 2FD	<input type="checkbox"/> 4FD	<input type="checkbox"/> 8FD (625/50)

## Short plugs on the board

**Note** Never change the setting of Factory use switches.

Board	Name	Ref. No./channel	Factory setting	Setting
APR-12	Audio input level	COR100/CH1	+4 dBm/600 $\Omega$	
		COR200/CH2	+4 dBm/600 $\Omega$	
	Audio input headroom	COR101/CH1	20 dB	
		COR201/CH2	20 dB	
	Monitor output level	L COR302	+4 dBm/600 $\Omega$	
		R COR402	+4 dBm/600 $\Omega$	
	Monitor output headroom	L COR300	20 dB	
		R COR400	20 dB	
	Variable monitor output level	L COR301	Fixed (UNITY)	
		R COR401	Fixed (UNITY)	
	HEAD TUNE Switch	S500/CH1	Factory use	—
		S600/CH2	Factory use	—
APR-13	Audio input level	COR100/CH3	+4 dBm/600 $\Omega$	
		COR200/CH4	+4 dBm/600 $\Omega$	
	Audio input headroom	COR101/CH3	20 dB	
		COR201/CH4	20 dB	
	Audio output level	COR301/CH1	+4 dBm/600 $\Omega$	
		COR401/CH2	+4 dBm/600 $\Omega$	
		COR501/CH3	+4 dBm/600 $\Omega$	
		COR601/CH4	+4 dBm/600 $\Omega$	
	Audio output headroom	COR300/CH1	20 dB	
		COR400/CH2	20 dB	
		COR500/CH3	20 dB	
		COR600/CH4	20 dB	
SS-63	Factory use	COR100	OPEN	—
	Factory use	COR101	OPEN	—
	Factory use	COR102	OPEN	—
	Factory use	COR103	SHORT*1	—
	Factory use	COR104	SHORT*1	—

\*1: COR103 and 104 have no plug, but are shorted by pattern.

## Switches on the board

**Note** Never change the setting of Factory use switches.

Board	Switch No.:	Name	Factory setting	Setting
DM-89	S101	: Y-RF LPF & EQ TEST	NORMAL POSITION	
	S102	: Factory use	NORMAL POSITION	
	S301	: C-RF LPF & EQ TEST	NORMAL POSITION	
	S302	: Factory use	NORMAL POSITION	—
	S501	: Factory use	ON	—
	S901	1 : RF adjusting switch	OFF (OPEN)	
		2 : Factory use	OFF (OPEN)	—
		3 : Factory use	OFF (OPEN)	—
		4 : Factory use	ON (CLOSE)	—
TBC-23	S1	1 : Y MUTE	OFF (OPEN)	
		2 : C MUTE	OFF (OPEN)	
		3 : Factory use	OFF (OPEN)	—
		4 : Factory use	OFF (OPEN)	—
		5 : COMB	OFF (OPEN)	
		6 : TBC TEST	OFF (OPEN)	
		7 : Factory use	OFF (OPEN)	—
		8 : VIDEO PHASE	OFF (OPEN)	
	S500	1 – 4 : Factory use	OFF (OPEN)	—
SS-63	S101	1*2 : FLASH MEMORY	OFF (OPEN)	—
		2 : ANA AUTO-TRACKING	ON (CLOSE)	
		3 : ANA DISABLE	OFF (OPEN)	
		4*3 : SV ERR DISABLE	OFF (OPEN)	—
	S1100	1 : EXTENDED MENU	OFF (OPEN)	
		2 : MAINTENANCE MODE ACCESS	OFF (OPEN)	
		3 – 8 : Factory use	OFF (OPEN)	—
	S1102	Never change the settings of the S1102 switch since each switch is set according to the characteristics of the unit.		
		1, 2 : Model ID switch	1                      2	
		Reserved:	OFF (OPEN)    OFF (OPEN)	—
		DNW-A100/A100P:	OFF (OPEN)    ON (CLOSE)	—
		DNW-A50/A50P:	ON (CLOSE)    OFF (OPEN)	—
		DNW-A45/A45P:	ON (CLOSE)    ON (CLOSE)	—
		3 : J/UC	ON (CLOSE)	
		4 : 525/625	DNW-A100/A50/A45:	OFF (OPEN)
			DNW-A100P/A50P/A45P:	ON (CLOSE)
	S1900	1 – 8 : Factory use	OFF (OPEN)	—
SSX-1	S301	1 – 8 : Factory use	OFF (OPEN)	—

\*2, \*3: Never change the switches S101-1 and S101-4.



## Set up menu

**Note** When Bank 1 to 4 menu is recalled, the current menu will be overwritten.  
Be sure to check the current menu first, before recall Bank 1 to 4.

## Main menu

### ITEM-000 series: Operational parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
001: PREROLL TIME	5S					
002: CHARACTER H-POSITION						
	DNW-A100/A50/A45:	14				
	DNW-A100P/A50P/A45P:	12				
003: CHARACTER V-POSITION						
	DNW-A100/A50/A45:	56				
	DNW-A100P/A50P/A45P:	6A				
004: SYNCHRONIZE	ON					
005: DISPLAY INFORMATION SELECT	T&STA					
006: LOCAL FUNCTION ENABLE	ST&EJ					
007: TAPE TIMER DISPLAY	+–12H					
008: MONITORING SELECTION FOR VTR-TO-VTR EDIT	MANU					
009: CHARACTER TYPE	WHITE					
011: CHARACTER V-SIZE	×1					
013 <sup>*4</sup> : 525/625 SYSTEM SELECT	OFF	–	–	–	–	–

\*4: ITEM013 is no relation with Bank.

### ITEM-B00 series: Bank operation parameter

This series is not necessary to write down the setting.

B00 series is OFF on the normal state. Set to ON only when ITEM is carried out. After finishing, B00 series return to OFF automatically.

ITEM	Factory setting
B01: RECALL BANK 1	OFF
B02: RECALL BANK 2	OFF
B03: RECALL BANK 3	OFF
B04: RECALL BANK 4	OFF
B11: SAVE BANK 1	OFF
B12: SAVE BANK 2	OFF
B13: SAVE BANK 3	OFF
B14: SAVE BANK 4	OFF
B20: RESET SETUP	OFF

## Extended menu

### ITEM-100 series: Operational panel parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
101: SELECTION FOR SEARCH DIAL ENABLE	DIAL					
102: MAXIMUM TAPE SPEED (B-CAM)						
DNW-A100/A50/A45:	x35					
DNW-A100P/A50P/A45P:	x42					
104: AUDIO MUTING TIME	OFF					
105: REFERENCE SYSTEM ALARM	ON					
106: CAPSTAN LOCK	SW					
107: REC INHIBIT LAMP FLASHING	OFF					
108: AUTO EE SELECT	S/F/R					
109: FORCED EE WHEN TAPE UNTHREAD	ON					
118: KEY INHIBIT SWITCH EFFECTIVE AREA						
SUB-ITEM 1: REMOTE SELECT	DIS					
2: MON/INPUT SEL	DIS					
3: CONTROL PANEL	DIS					
119: VARIABLE SPEED LIMIT IN KEY PANEL CONTROL	OFF					
120: CTL LOCK IN VAR/SHTL	OFF					
122: AUTO EE WITH ANALOG TAPE	DIS					
123: TAPE INDEX SELECT	ALL					

### ITEM-200 series: Remote intergace parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
201: PARA RUN	DIS					

### ITEM-300 series: Editing parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
301: VAR SPEED RANGE FOR SYNCHRONIZATION	~1.5					
302: CAPSTAN RE-LOCKING DIRECTION						
DNW-A100/A50/A45:	DECEL					
DNW-A100P/A50P/A45P:	ACCEL					
305: SYNC GRADE	ACCUR					
307: AUTO-DELETION FOR INCONSISTENT DATA	MANU					
308: SELECTION OF STD/NON-STD FOR COMPOSITE VIDEO IN	AUTO					
309: SERVO REFERENCE SELECT	AUTO1					
310: REC INHIBIT	ALL					
316: CONFIDENCE PB MODE	OFF					
318: EDIT RETRY	ON					
320: AUDIO PB PROCESS	FADE					

**ITEM-400 series: Preroll parameter**

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
401: FUNCTION MODE AFTER CUE-UP	STOP					
403: AUTOMATIC PREROLL REFERENCE ENTRY	DIS					
404: CUE-UP BY TC	REEL					
405: CUE-UP BY CTL	CAP					

**ITEM-500 series: Tape protection parameter**

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
501: STILL TIMER	8M					
502: TAPE PROTECTION MODE FROM SEARCH	STEP					
503: TAPE PROTECTION MODE FROM STOP	STD BY					
504: DRUM ROTATION IN STANDBY OFF	OFF					
505: STILL TENSION	NORM					

**ITEM-600 series: Time code generator parameter**

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
601: VICT POSITION SEL-1						
DNW-A100/A50/A45:	16H					
DNW-A100P/A50P/A45P:	19H					
602: VICT POSITION SEL-2						
DNW-A100/A50/A45:	18H					
DNW-A100P/A50P/A45P:	21H					
603 <sup>*5</sup> : ID CODE PRESET	OFF	—	—	—	—	—
604: ID CODE SW	OFF					
605: TCG REGEN MODE	TC&UB					
606: TC OUTPUT SIGNAL IN REGEN MODE	TAPE					
607: U-BIT BINARY GROUP FLAG	000					
608: PHASE CORRECTION	OFF					
609: TCG CF FLAG	OFF					
610: REGEN CONTROL MODE	AS&IN					

\*5: ITEM603 is no relation with Bank.

## ITEM-700 series: Video control parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
701: SELECTION OF VIDEO DELAY/SYNC DELAY	SYNC					
703: BLANK LINE SELECT						
SUB-ITEM	for DNW-A100/A50/A45					
	0: All line	---				
	12: 12 line	BLANK				
	13: 13 line	BLANK				
	14: 14 line	BLANK				
	15: 15 line	BLANK				
	16: 16 line	BLANK				
	17: 17 line	BLANK				
	18: 18 line	BLANK				
	19: 19 line	BLANK				
	20: 20 line	BLANK				
	for DNW-A100P/A50P/A45P					
	0: All line	---				
	9: 9,322 line	BLANK				
	10: 10,323 line	BLANK				
	11: 11,324 line	BLANK				
	12: 12,325 line	BLANK				
	13: 13,326 line	BLANK				
	14: 14,327 line	BLANK				
	15: 15,328 line	BLANK				
	16: 16,329 line	BLANK				
	17: 17,330 line	BLANK				
	18: 18,331 line	BLANK				
	19: 19,332 line	BLANK				
	20: 20,333 line	BLANK				
	21: 21,334 line	BLANK				
	22: 22,335 line	BLANK				
	23: 23 line	HALF				
704: DECODE Y/C SEP MODE						
SUB-ITEM	for DNW-A100/A50/A45					
	12: 12 line	B&W				
	13: 13 line	B&W				
	14: 14 line	B&W				
	15: 15 line	B&W				
	16: 16 line	B&W				
	17: 17 line	B&W				
	18: 18 line	B&W				
	(Continue)					

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
704: DECODE Y/C SEP MODE (Continuation)						
SUB-ITEM	for DNW-A100/A50/A45					
	19: 19 line	B&W				
	20: 20 line	B&W				
	21: 21 line	COMB				
	22: 22 line	COMB				
	for DNW-A100P/A50P/A45P					
	9: 9,322 line	B&W				
	10: 10,323 line	B&W				
	11: 11,324 line	B&W				
	12: 12,325 line	B&W				
	13: 13,326 line	B&W				
	14: 14,327 line	B&W				
	15: 15,328 line	B&W				
	16: 16,329 line	B&W				
	17: 17,330 line	B&W				
	18: 18,331 line	B&W				
	19: 19,332 line	B&W				
	20: 20,333 line	B&W				
	21: 21,334 line	B&W				
	22: 22,335 line	B&W				
705: EDGE SUBCARRIER REDUCER MODE	AUTO					
706: VERTICAL BLANKING V SHIFT	ON					
707: FORCED VERTICAL INTERPOLATION OFF	AUTO					
709: CAV LEVEL FORMAT (DNW-A100/A50/A45 only)						
SUB-ITEM	0: INPUT CAV LEVEL	B-CAM				
	1: OUTPUT CAV LEVEL	B-CAM				
710: INTERNAL SIGNAL GENERATOR	OFF					
712: VIDEO PROCESS ON CAP LOCK 2FIELD	OFF					
713: VIDEO SETUP REFERENCE LEVEL (DNW-A100/A50/A45 only)						
SUB-ITEM	0: MASTER LEVEL	7.5%				
	1: INPUT LEVEL	MSTER				
	2: VBLK REMOVE CNT	THROU				
	3: BETACAM PB LEVEL	MSTER				
	4: OUTPUT LEVEL	MSTER				
714: VIDEO ADJUST RANGE	-3~+3					
715: VIDEO GAIN	800					
716: CHROMA GAIN	800					
717: CHROMA PHASE CONTROL	80					
718: SETUP LEVEL	110					

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
719: SYSTEM PHASE SYNC	80					
720: SYSTEM PHASE SC	0					
721: Y/C DELAY	800					
722: REMOTE VIDEO CONTROL MODE	CMPST					
723: INPUT VIDEO BLACK						
SUB-ITEM	for DNW-A100/A50/A45					
	0: All line	---				
	12: 12 line	THROU				
	13: 13 line	THROU				
	14: 14 line	THROU				
	15: 15 line	THROU				
	16: 16 line	THROU				
	17: 17 line	THROU				
	18: 18 line	THROU				
	19: 19 line	THROU				
	20: 20 line	THROU				
	for DNW-A100P/A50P/A45P					
	0: All line	---				
	9: 9,322 line	THROU				
	10: 10,323 line	THROU				
	11: 11,324 line	THROU				
	12: 12,325 line	THROU				
	13: 13,326 line	THROU				
	14: 14,327 line	THROU				
	15: 15,328 line	THROU				
	16: 16,329 line	THROU				
	17: 17,330 line	THROU				
	18: 18,331 line	THROU				
	19: 19,332 line	THROU				
	20: 20,333 line	THROU				
	21: 21,334 line	THROU				
	22: 22,335 line	THROU				
726: H BLANKING WIDTH	NAROW					
727: VIDEO EDIT PREVIEW SWITCHER	INT					

**ITEM-800 series: Audio control parameter**

IITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
802: DIGITAL AUDIO MUTE IN SHUTTLE MODE	OFF					
805: AUDIO MONITOR OUTPUT MIXING	RMS					
806: METER SCALE PEAK	0					
807: AUDIO OUTPUT PHASE	80					
808: INTERNAL AUDIO SIGNAL GENERATOR	OFF					
809: AUDIO LEVEL METER DIMMER CONTROL	0					
810: AUDIO EDIT PREVIEW SWITCHER	INT					
813: AUDIO CH3 INPUT SELECT	SW					
814: AUDIO CH4 INPUT SELECT	SW					

**ITEM-900 series: Digital process parameter**

IITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
911: NO COMPRESSION LINE	OFF					

**ITEM-F00 series: Adjustment use only**

This series is not necessary to setting.

In the normal operation, use the factory settings.

IITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
F01: AUDIO NR IN SP MODE	ON					
F02: EMERGENCY TAPE PROTECTION	ENA					
F13: TRACKING CONTROL VIA SEARCH DIAL	OFF					
F15: ANALOG TAPE LTC INSERT	DIS					
F16: DEVICE TYPE MODIFY	0					



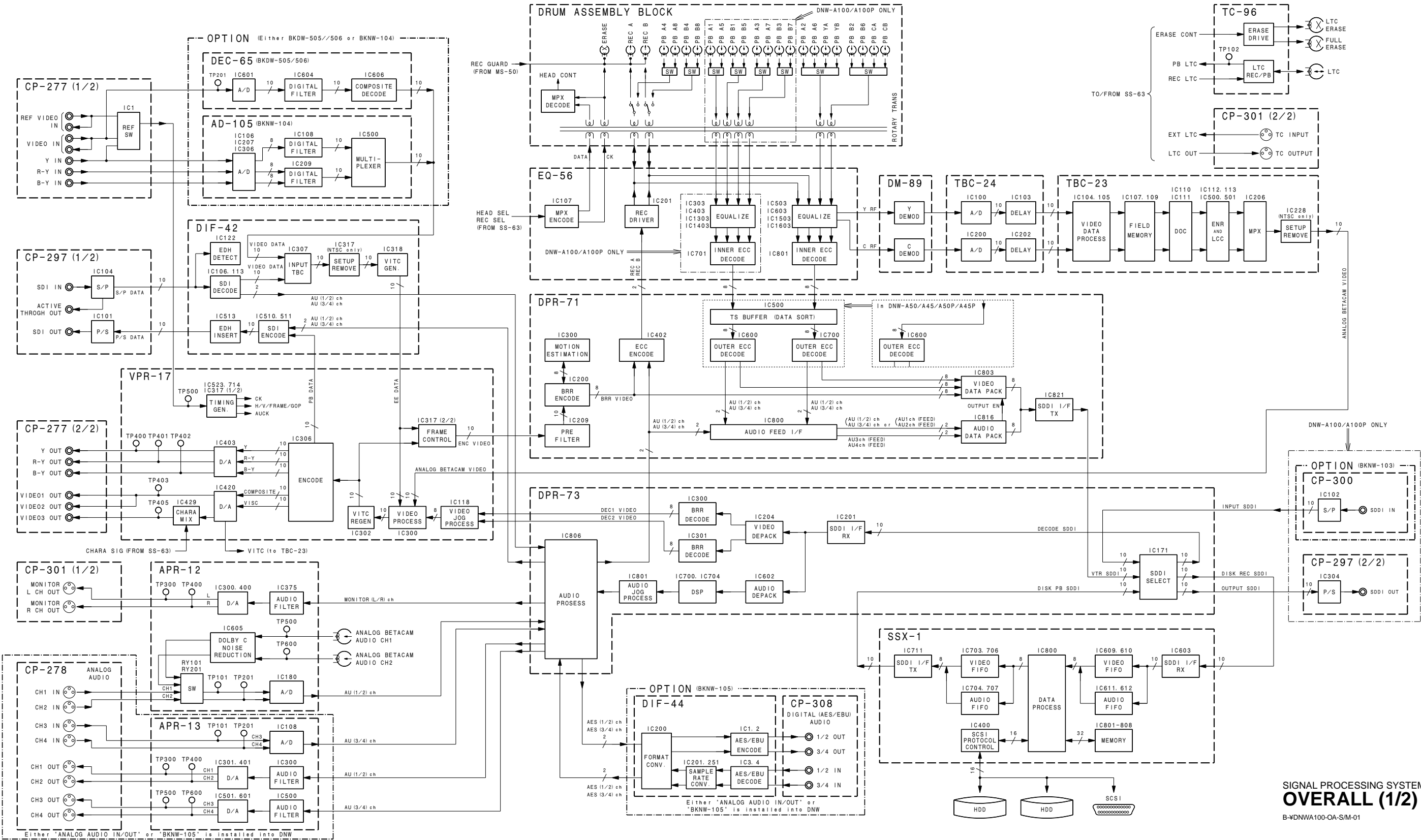


## **Appendix C**

### **Block Diagrams**

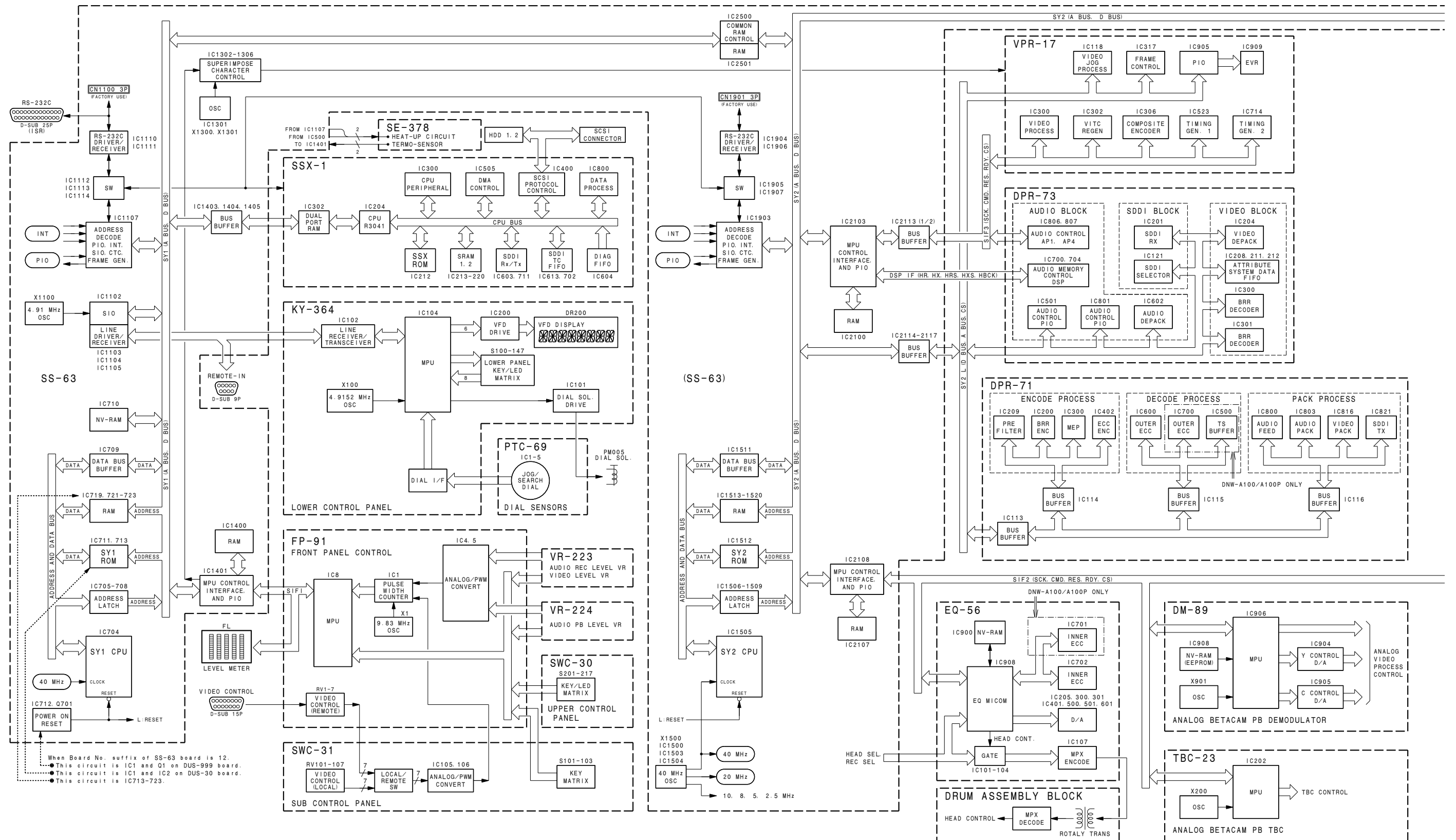
<b>INDEX</b>	<b>Page</b>
OVERALL (1/2) Signal Processing system .....	C-3
OVERALL (2/2) Servo/System Control system .....	C-5

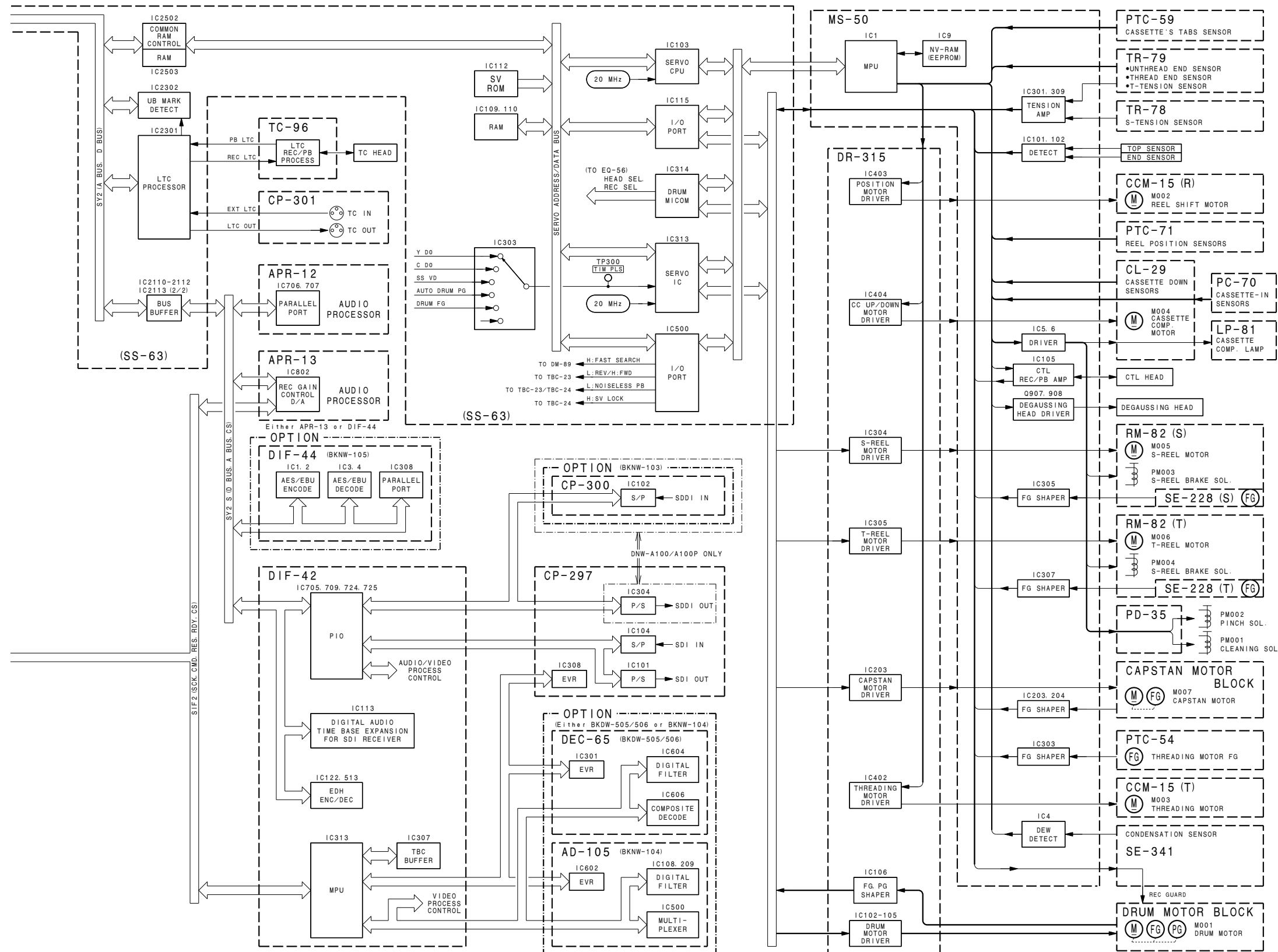




SIGNAL PROCESSING SYSTEM  
OVERALL (1/2)

B-VDNWA100-OA-S/M-01





SERVO/SYSTEM CONTROL SYSTEM  
OVERALL (2/2)  
B-WDNWA100-OA-S/M-01



このマニュアルに記載されている事柄の著作権は当社にあり、説明内容は機器購入者の使用を目的としています。

従って、当社の許可なしに無断で複写したり、説明内容(操作、保守等)と異なる目的で本マニュアルを使用することを禁止します。

The material contained in this manual consists of information that is the property of Sony Corporation and is intended solely for use by the purchasers of the equipment described in this manual.

Sony Corporation expressly prohibits the duplication of any portion of this manual or the use thereof for any purpose other than the operation or maintenance of the equipment described in this manual without the express written permission of Sony Corporation.

Le matériel contenu dans ce manuel consiste en informations qui sont la propriété de Sony Corporation et sont destinées exclusivement à l'usage des acquéreurs de l'équipement décrit dans ce manuel.

Sony Corporation interdit formellement la copie de quelque partie que ce soit de ce manuel ou son emploi pour tout autre but que des opérations ou entretiens de l'équipement à moins d'une permission écrite de Sony Corporation.

Das in dieser Anleitung enthaltene Material besteht aus Informationen, die Eigentum der Sony Corporation sind, und ausschließlich zum Gebrauch durch den Käufer der in dieser Anleitung beschriebenen Ausrüstung bestimmt sind.

Die Sony Corporation untersagt ausdrücklich die Vervielfältigung jeglicher Teile dieser Anleitung oder den Gebrauch derselben für irgendeinen anderen Zweck als die Bedienung oder Wartung der in dieser Anleitung beschriebenen Ausrüstung ohne ausdrückliche schriftliche Erlaubnis der Sony Corporation.

## For the U.S.A. and Canada

### SAFETY CHECK-OUT

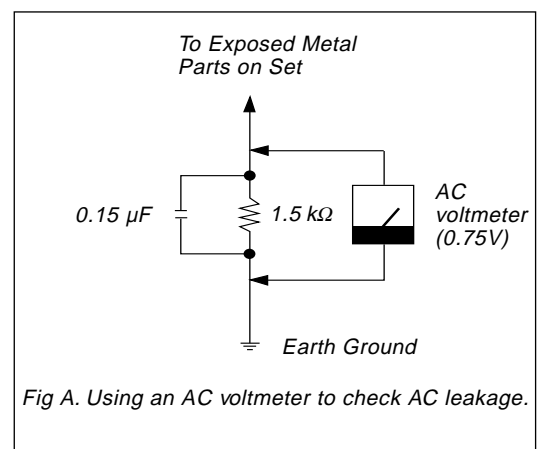
After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

### LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)



DNW-A100 (UC)  
DNW-A100P (CE, UC)  
DNW-A50 (UC)  
DNW-A50P (CE, UC)  
DNW-A45 (UC)  
DNW-A45P (CE, UC) E  
3-190-561-01

**Sony Corporation**  
Broadcast Products Company

Printed in Japan  
1996. 11 08  
©1996

Published by Broadcast Products Company